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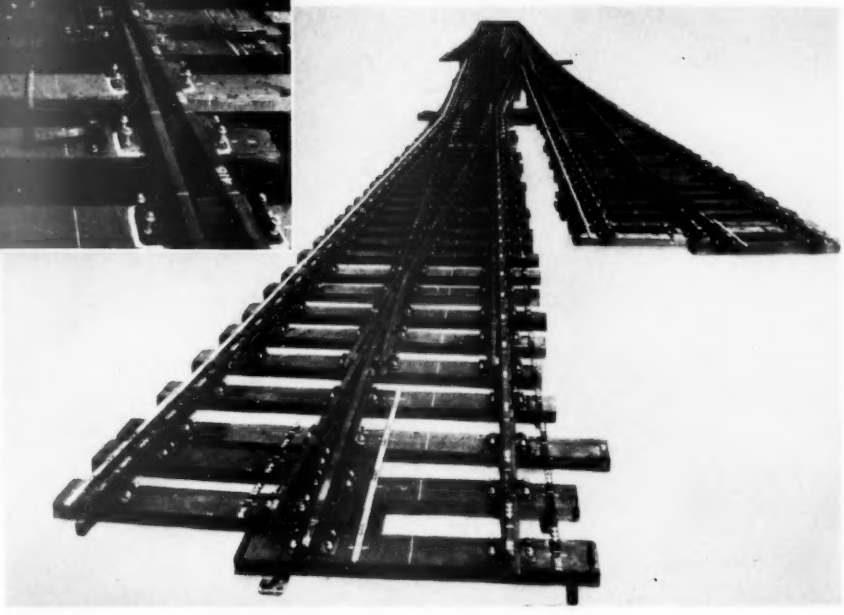
Detail of Switch Diamonds complete with facing point locks and signal fittings

SWITCHES and CROSSINGS



WERRINGTON JUNCTION

near Peterborough on the East Coast Main Line, Eastern Region, British Railways.

Photograph by courtesy of British Railways.

Remodelling of junction from fixed 1 in 8 Obtuse Crossings to 1 in 13 Switch Diamonds, using 1 in 20 turnouts with Curved Chamfered 'F' type switches. This junction, giving unlimited speed on the main lines with 55 m.p.h. on the Spalding lines, incorporates the use of Mills 'C' type clips, rubber bonded cork pads between baseplates and timbers, Plastic ferrules and Jarrah hardwood timbers, and was manufactured from 109 lb. F.B. rail by us, complete with Signal fittings and set out in our works to exact requirements for inspection.

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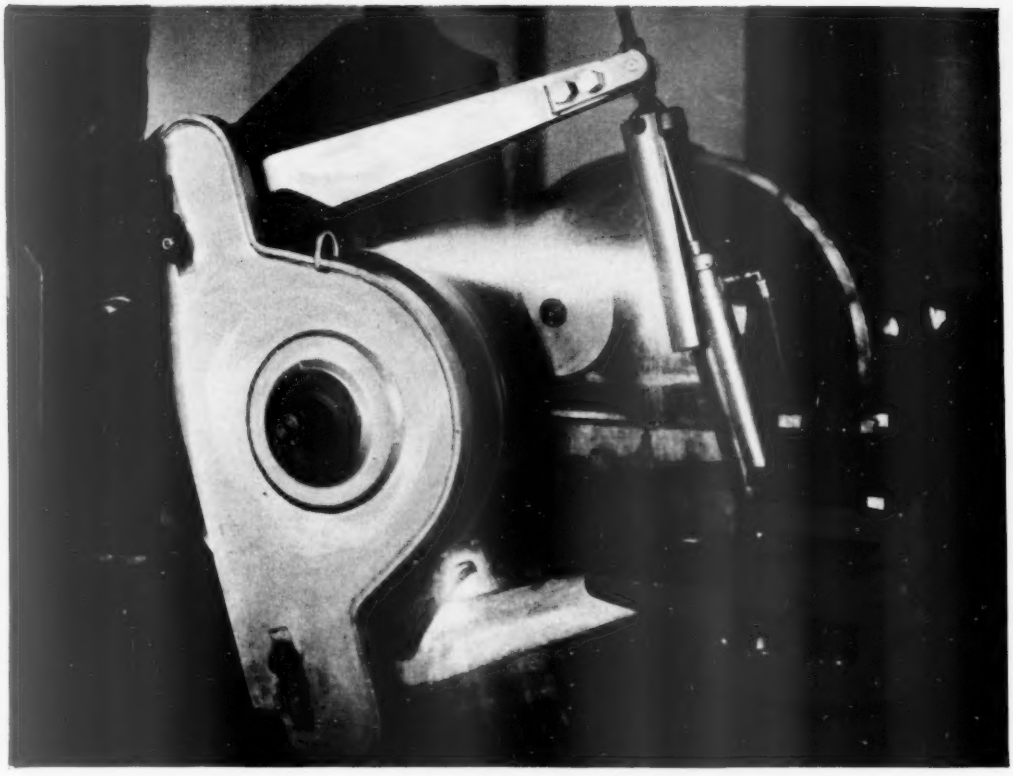

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New Minister of Transport

THE choice of Mr. Ernest Marples, Conservative M.P. for Wallasey, as Minister of Transport in succession to Mr. Harold Watkinson, who becomes Minister of Defence, is recognition of the qualities needed in the holder of this office. The new Minister has experience of industry and of collaboration with technical specialists, and has shown drive in carrying out plans and effecting improvements. As Postmaster-General since January, 1957, Mr. Marples has displayed energy in improving postal and telecommunications services, largely by encouraging the introduction of new techniques and equipment. Previously, as Parliamentary Secretary to the Ministry of Housing & Local Government, he played an important part in effecting the rapid building of large quantities of houses. His varied experience should help him in supporting the British Transport Commission in implementation of British Railways plans for modernisation and re-equipment. His training as an accountant will help him in studying the problems of finance and charges of the nationalised transport undertakings. His experience as a civil engineering contractor concerned *inter alia* with electric power stations, docks, wharves, and tunnels, is a useful asset in his new post. Like his predecessor he has been included in the Cabinet, which is further recognition of the importance of his department. The union between the Ministries of Transport and Civil Aviation is now dissolved with the transfer of responsibility for all aviation matters to the new Minister of Aviation, Mr. Duncan Sandys. Mr. J. S. Maclay in 1951 was the first Minister to hold both portfolios, and the two Ministries were united in 1953 under Mr. Alan Lennox-Boyd. Any lightening of Mr. Marples' responsibilities caused by this separation is offset by the addition to them of shipbuilding and ship-repairing. The assignment to Lord Hailsham as Lord Privy Seal of the task of promoting and co-ordinating scientific and technological development is not intended to displace scientific and technical staff and activities in Government departments or nationalised industries, or to restrict the freedom of industry in determining the direction of research; nor is any change to be made in the executive responsibilities of Ministers within whose scope scientific matters may come.

Higher Fares

THE increases in all British Railways and some London Transport passenger fares, effective from November 1, were to be expected in view of the authority, of which full advantage has not been taken, obtained from the Transport Tribunal to raise fares to certain limits. Examples are given elsewhere in this issue. A feature is the tapering of ordinary fares over longer distances. Ordinary fares will be increased from 2d. to 2½d. a mile second class and from 3d. to 3⅜d. a mile first class, up to 200 miles. For the next 100 miles the second class rate will be 2.1d. a mile. Above 300 miles it will remain at the present 2d. a mile. To encourage travel in the London area outside peak hours five-day off-peak tickets will be available costing nearly 20 per cent less than the new weekly season tickets. A new off-peak day return ticket will be cheaper than the existing day return. Increased off-peak travel would result in the better use of much motive power, rolling stock and operating staff. The new ticket is an experiment. It will not go far to solve the peak traffic problem unless pressure by those wishing to take advantage of the cheaper fares can bring about a staggering of working hours. The British Transport Commission estimates that the additional revenue derived from these increases will be £8,000,000 a year for British Railways and £4,000,000 for London Transport Executive.

Increased Foreign Travel Allowance

THE raising of the basic foreign travel allowance for residents in the United Kingdom to £250 a year will enable many people not only to travel for longer periods and more often on the Continent of Europe, in North Africa, and in other places nearer Britain, but also to travel on holiday, without undue restriction on expenditure, in the U.S.A., Canada, and other countries outside the sterling area. The longer time which can be spent in Europe may well result in a realisation of the pleasures of more leisurely travel, and some return to cross-Channel and other surface transport. A good many people who in recent years have been restricted to one holiday abroad may now take two, as for instance a winter sports and a summer holiday. British Railways services to the Continent and the connecting European railways are likely to benefit. The longer time which can be spent further afield makes practicable journeys by train in several continents. Air-conditioning and other amenities have greatly increased the comfort of rail travel in many countries, and the train remains in many cases the pleasantest mode of transport for the tourist.

F.B.I. Inquiry into Industrial Trends

TWO years have now been covered by inquiries into the industrial situation conducted at four-monthly intervals by the Federation of British Industries. During this period trends are shown to have changed from slightly downward to markedly upward. Results of the sixth inquiry completed earlier this month show continuing expansion over a wide front. This is expected to continue but has not yet led to a corresponding expansion in plans for capital investment. The fifth inquiry in June indicated an increase in output. This has continued. The cause of increased output has been the further rise in orders received. The indication in June of lengthening order books is more marked. One-half of the undertakings which have replied to the inquiry are now working to capacity, compared with one-fifth in February, 1959.

The point has not yet been reached at which there is widespread planning of new capacity. In provision for new plant and machinery the downward trend was checked last June and the last inquiry shows an upward movement. With new building the downward trend shows no significant improvement. In general, the larger firms are increasing output more markedly than the smaller. The engineering and vehicle industries show the greatest increases in output, and food, drink, and tobacco and building materials show the lowest.

Overseas Railways Traffics

RAILWAY operating revenues of the International Railways of Central America for August amounted to $762,029 compared with $946,651 in August, 1958, a decrease of $184,622. The net revenue from railway operations showed a loss of $334,671 ($204,033 loss) and the net income a loss of $364,656 ($169,155 loss). The aggregate net revenue from railway operations for the period January 1, to August 31, amounted to $59,970 ($248,346), and the aggregate net income showed a loss of $368,325 ($177,486 loss). East African Railways & Harbours approximate railway revenue for August was £1,671,000 compared with £1,629,000 in August, 1958, an increase of £42,000. The greater part of this increase was due to goods traffic receipts which, at £1,302,000, were £45,000 higher than for the previous year. There were also small increases amounting to £12,000 in passenger traffic, other coaching, livestock, hotel and catering services and miscellaneous receipts. These increases were partly offset by lower earnings from inland marine and road services that were £15,000 down on the revenue from these services in 1958. Latest figures from the Midland Railway Company of Western Australia Limited show that estimated railway and road service receipts for July amounted to £A71,731 (£A60,635).

B.T.C. Working Parties

LAST week we referred editorially to the British Transport Commission working party dealing with chemical weed control. This party has been formed to co-ordinate examination and controls throughout British Railways of any new treatment that comes to notice. To this end, it keeps in touch with research activities carried out elsewhere such as those at Chesterford Park Research Station. The party is comprised of members whose normal occupations cover a wide field and is representative of others working along similar lines though on differing subjects. In every case the aim is to keep in touch with latest scientific and technical developments through friendly and informal contact. In addition to their primary functions, the parties vindicate the Commission of a charge sometimes made against it. This is that the B.T.C. is unwilling to incorporate new ideas until considerable time has elapsed from inception of the idea. While this charge may sometimes appear to be justified it is obvious that the heavy financial burden always with the Commission must force it to examine all expenditure with the most meticulous care.

New B.T.C. Police Headquarters

THE opening last week of new British Transport Commission Police Headquarters by Mr. K. W. C. Grand, a Member of the B.T.C. and Chairman of the Commission's Police Committee, marks a new stage in the development of the B.T.C. Police Force which succeeded the original Railway Police Force. The force has undergone various changes since the nationalisation of the railways, all designed to keep pace with the changing pattern of police and transport organisations in this country. The establishment of the new headquarters is an important part of the reorganisation of the force for which Mr. Arthur C. West, the Chief Constable, has special responsibility. The centralisation of the Administration and Investigation Departments is another important feature. This will enable the Chief Constable to implement fully and effectively the Commission's policy with regard to the general work of the force. The provision of a focal point for its activities and a better distribution of manpower in the most important areas will no doubt bring greater efficiency and give a better service to the railway user and to the various undertakings of the Commission.

Reduced Expenditure on Coal Production

A reduction of £175,000,000 in capital expenditure less than originally planned by the National Coal Board for the period 1956-65 was announced in " Revised Plan for Coal," published by the Board last week. Total capital expenditure in 1960-65 is expected to be some £510,000,000. The Chairman of the N.C.B., Sir James Bowman, stated that the industry will not be reduced greatly in size, but that it will be more compact and better able to compete with those supplying other fuels. This has been taken into account by the British Transport Commission in assessing its future revenue and requirements for handling traffic. In its report on re-appraisal of the modernisation plan for British Railways the Commission has observed that although changes in the use and distribution of coal tend to reduce the average length of haul by rail, the share of the total tonnage of coal offering which is moved by rail is increasing, and may increase further.

Administration of O.R.E.

THE Board of Management of the International Union of Railways (U.I.C.) decided recently that the seat of the Office for Research & Experiments (O.R.E.) should remain at Utrecht, where also are situated the headquarters of the Netherlands Railways. That system, it was also decided, should continue as managing administration of O.R.E. for a further four years. Dr. F. Q. den Hollander, who as President of the Netherlands Railways until January 1, 1959, was one of the founders of the Office, is President of O.R.E., a position from which he retires at the end of this year. His successor is Mr. J. P. Koster, Director General of the Netherlands Railways. O.R.E. was founded by decision of the U.I.C. Board of Management in 1949 to increase and co-ordinate the efforts of the several railway managements in the field of research, and to obtain, without increasing total financial expenditure more results suitable for general application and greater progress in developing techniques than would be possible with individual action by railway administrations. The technical and scientific staff of O.R.E. is drawn from members of U.I.C. including British Railways. The achievements of O.R.E. are recorded in this journal from time to time. The Office offers the advantages of an independent institution free from national obligations.

Who Reads What?

ACCORDING to a survey made for the Department of Scientific & Industrial Research by the Special Survey Division of the Central Office of Information, technical literature is used for news rather than for reference and as a source of ideas. The survey was made in 1956 of more than 1,000 industrial scientists, technologists, and other senior technical staff in the science-based electrical and electronics industries. Results show that from every 100 technologists 58 read one or more articles from each issue of a journal, 33 scanned the pages, three merely looked at the advertisements, and six studied the index. These conclusions have long provided the basis of our editorial policy, which maintains that the primary function of the technical press is to stimulate ideas and to spread the news of important developments in the railway technical field. Of particular interest in the Survey's conclusions is the reference to those who confine their reading to the advertisements: we have always maintained that the informative advertisement represents a legitimate supplement to the editorial content of any good technical journal

Electric Luggage Vans

THE decision to run almost all British Railways, Southern Region, boat trains as multiple-unit sets following the extension of electrification to the Kent Coast presented a problem in the conveyance of mail and registered baggage under customs seal. Ordinary vans attached to the multiple-unit trains, even if fitted with air brakes, could not be used, but the introduction of motored bogie luggage vans has proved successful while offering several operating advantages. The general construction of the vans, bogies, and power and brake equipment is the same as in the other coaches, which enables them to contribute to the power-to-weight ratio of the trains, and also enables

the train to be driven from the van. There are important additions to the standard equipment which enable the vans to perform their requisite duties at the ports. To avoid the use of shunting locomotives, a 230-Ah. traction battery supplies power to the motors of the van so that it can move unassisted on the necessarily unelectrified quayside lines. This in turn opens the way to profitable use of the vans as light locomotives when not needed for boat train traffic. In this role they are able to haul trains of up to 100 tons and vacuum brake equipment has been fitted to control the brakes on the trailing load. This facility makes the van a valuable dual-purpose vehicle.

Catering at St. Pancras

THE "Midland" Cafeteria and "London Bar," both described elsewhere in this week's issue, represent the final stage of catering modernisation at St. Pancras Station, London Midland Region, British Railways—"The Shires" restaurant and bar, representing the first stage, was described in our August 1, 1958, issue. A particular drive toward the provision of value for money has been made with the "Midland"; prices for hot meat meals with two vegetables are competitive with those of popular restaurants anywhere in the country. Dishes are cooked and served with equipment and in surroundings which add considerably to their face price value. An unusual feature of the new facilities, and one which will be appreciated by many, is the actual separation, while retaining direct communication, of the licensed bar from the restaurant. This feature possesses obvious family appeal without deprivation of alcoholic refreshment. Once again, British Transport Hotels & Catering Services has provided new catering premises which combine modern artistry with practical design. Both these new premises undoubtedly will be recognised by foreign tourists as comparable at least on equal terms with anything in the home country.

Mr. Marples' Task

THE problems faced by the new Minister of Transport, Mr. Ernest Marples, include the financial position of the British Transport Commission, which must be enabled to achieve financial equilibrium as soon as possible, implementation of the plan for modernisation and re-equipment of British Railways, the decline in the traffic and restrictions in the services of public road passenger transport, more particularly in rural areas, the congestion on the roads, and the mounting toll of road accidents. The bold imaginative approach, freshness of outlook and ability to achieve results which he showed as Postmaster-General seem to be the qualities required in his new position.

Mr. Harold Watkinson, Minister of Transport & Civil Aviation in the last Government, was courageous and energetic in facing realities and in supporting an extensive programme of capital expenditure on re-equipping the railways when the financial difficulties of the Commission might have discouraged the less adventurous. Similarly, he succeeded in persuading the Treasury to expand the road-building programme of his predecessors and to carry it through despite the cuts in other programmes of capital expenditure of public funds. Nevertheless he was obliged to work to a short-term programme. If any criticism is justified it is that the last Government seemed to lack a transport policy as a whole. Its decision to proceed with railway modernisation was right in itself, but does not seem to have been related to any general policy for the future pattern of transport. No decision seems to have been taken as to the relations of the several forms of transport to each other or how best to use the large amount of capital invested in them.

Coming fresh to the industry in the knowledge that he is a member of a Government almost certainly to stay in office for four to five years, Mr. Marples has a great opportunity. Decisions taken today can be made on a longer-term basis. The risk of disturbance to the transport industry through a change of policy has been largely removed. There is reason to hope that the Government and Parliament will discuss and decide transport matters in an atmosphere free from strong political prejudices and without the threat of action to serve purely political ends. Even if the Labour Party were returned eventually to power it is improbable that further nationalisation would figure in its programme. The threat of re-nationalisation of road haulage, with the disruption which it would inevitably cause, is now removed.

Mr. Marples can frame policy with regard solely to the interests of transport and its users. If he is diligent in applying himself to the task of re-creating an efficient, economic, and adequate system of national transport he is unlikely to encounter serious opposition in Parliament. He is not regarded as politically prejudiced and is admired for the vigour and efficiency he has already shown as a Minister. If he succeeds in inspiring the transport industry to the extent that he has inspired the Post Office he will have served the country well.

Before he tries to resolve the problems of the several sections of the transport industry he would do well to formulate a long-term transport policy. Once that has been determined, each of the many deficiencies to be remedied can be considered in relation to it. The future of the British Transport Commission cannot be settled until the role of British Railways has been decided. The problem of maintaining adequate public passenger services in sparsely populated areas cannot be solved before a decision has been taken on the future of public, and its relation to personal, transport and whether the former is to be encouraged, with financial help if need be, or allowed to continue to decline. Total expenditure on the roads should not be fixed until the future growth of road transport and the part it will be expected to play in relation to the railways, have been determined. These are among larger issues which must be given the most careful consideration to enable that comprehensive transport policy to be drawn up which is so urgently necessary to ensure that adequate transport is available at the lowest possible cost to assist Britain to maintain and improve its position in the competitive markets of the world.

Transport M.P.'s

WHEREAS all the leading Conservative speakers on transport matters in Parliament have been returned to the House of Commons, including the officers of the back benchers' transport committee, the ranks of the Labour Opposition have been seriously depleted in this regard. Losses among the Members sponsored by the railway trade unions have been proportionately far greater than the overall loss and than among any other group. Mr. Ernest Davies, joint front-bench spokesman with Mr. George Strauss in the last Parliament, and Chairman of the Opposition Transport Group, did not stand, and six frequent speakers in transport debates suffered defeat, several of them unexpectedly. Mr. Percy Morris, a former President of the Transport Salaried Staffs' Association, was defeated at Swansea West, and Mr. George Lindgren, its present Treasurer, lost his seat at Wellingborough.

This is offset by two newcomers, Mr. Ray Gunter, President of the T.S.S.A., M.P. for Southwark, who sat in the Labour Governments of 1945-51, and Mr. Charles Mapp, Member for Oldham East. The National Union of Railwaymen has lost three active M.P.s, Mr. David Jones, who lost the Hartlepools, and was Vice-Chairman of the Opposition Transport Group, Mr. J. A. Sparks, defeated at Acton, and Mr. A. J. Champion, who lost South-East Derby by 12 votes. All three had had long experience on the railways. No N.U.R. members have been elected to take their place. The only other railwayman to enter the House of Commons is Mr. A. C. Manuel, a former engine driver and member of the Associated Society of Locomotive Engineers & Firemen. He sat in Parliament from 1950 to 1955, and is returned for his former seat of Central Ayrshire. The Transport & General Workers' Union lost only one M.P., Mr. Charles Gibson, defeated at Clapham, but he rarely contributed to transport debates as he had other special political interests.

Of the former leaders on transport, Mr. George Strauss remains to lead on the front bench. Mr. Frank McLeavy, of the T. & G.W.U., who is specially interested in road transport, and Mr. Percy Collick, and Mr. Walter Monslow of A.S.L.E.F., and Mr. Harry Hynd of the T.S.S.A., remain as the more active among a few other Members sponsored by the railway and transport unions.

XUM

United Kingdom Help for Overseas Railways

BRITISH railways and British manufacturers of railway material of all kinds have much to show the world. There is no department of railway activity or locomotive, vehicle, or article of railway equipment or modern railway installation or manufacturer's works in Britain which does not contain much of great interest to those concerned with the management, operation, and equipment of railways in every country. British Railways and London Transport Executive are unrivalled exponents for instance of methods of operating trains—over the busiest lines in the world—and of signalling. The layout of diesel locomotive maintenance and repair depots and of marshalling yards and the design of equipment for these, the long-welding and laying of rails, soil mechanics, and the application of electronics to statistics, accountancy, and the compilation of timetables are spheres of activity of growing importance in which British skill and practice are unbeaten.

To know what is being done and planned in Britain is of the utmost interest to railways in Asia and Africa where conditions have not yet permitted the development and application of such techniques and skills. The United Nations Economic Commission for Asia and the Far East (E.C.A.F.E.) serves States and territories in Asia in which there are railways: North Borneo, Burma, Cambodia, Ceylon, China, Hong Kong, India, Indonesia, Japan, Korea, Malaya, Nepal, Pakistan, the Philippines, and Siam. The United Kingdom is a member by virtue of its responsibilities in Asia. United Kingdom delegations to past sessions of the Rail Sub-Committee of E.C.A.F.E. have observed that although the valuable and extensive programmes of work approved at each session deal with many diverse aspects of railway operation, there are many other subjects on which information would be helpful to the railways of this region of Asia, but that these cannot be included in the programmes of work. Individual railways moreover may have their own special problems with which assistance would be welcomed if it could be provided. Consideration therefore has been given to means whereby the United Kingdom could further help the railways of the region and contribute to the successful work of the Rail Sub-Committee by providing information and advice on particular technical, economic, and commercial problems.

In consequence a Railway Advisory Service has been established in the United Kingdom to enable the railways served by E.C.A.F.E. to draw on knowledge and experience available in Britain as a result of the modernisation programme now being undertaken by British Railways and of widespread collaboration with railways throughout the world. Any railway administration which has problems in the technical, economic, and commercial fields with which it would like help is invited to apply to the United Kingdom Railway Advisory Service (U.K.R.A.S.), care of the International Inland Transport Branch of the Ministry of Transport in London. On receipt of a request U.K.R.A.S. will apply to a known source of information on British Railways, in British industry, or elsewhere. The question will be analysed and recommendations or solutions submitted to the railway making the application. In some cases the problem may necessitate sending one or more specialists to the country concerned for investigation of all the factors. Here again U.K.R.A.S. will be able to call on the greatest knowledge and skill available. It is intended that, in general, U.K.R.A.S. will make no charge for its services provided. If it is necessary to charge a small fee, the applicant railway administration will be informed at an early stage and can withdraw its request if it so desires. The establishment of this advisory service is a constructive and imaginative action by the British Government. It is hoped that the service will be of value to the railways of southern and south-east Asia and the Far East and that they will make full use of it.

Another way in which this country has long helped, and is helping, railways overseas is in the training of members of their staffs on the railways of Britain and in the works and offices of British manufacturers of railway plant and equipment. Facilities for training in the United Kingdom also are available under the Colombo Plan Technical Co-operation Scheme and scholarships are offered by the Federation of British Industries. The variety of subjects in which instruction can be obtained by trainees with varying degrees of experience is very great. The training facilities and courses are described in a booklet issued by the Ministry of Transport, the subject of notice on page 329. There are few more useful ways in which Britain can help the less-developed countries of Asia.

Aluminium Technology for Rolling Stock

THE major part of a paper "Aluminium Technology and Railway Rolling Stock" given by Mr. K. P. Brockway of the British Aluminium Co. Ltd., before the Institution of Locomotive Engineers in London earlier this week, deals with the technical aspects of aluminium as applicable to its use for railway vehicle body and frame structural purposes and there is mention of its further use for wheel centres and screw couplings.

Mr. Brockway believes that progress in rolling stock design has been slower than necessary because those prototypes which have been built have not been supported by basic research and development before construction, or complete testing in service with logical and comprehensive interpretation of the results obtained. He proposes that to maintain the reputation of railway industries and to promote business, designers must be prepared to leave the safety of the beaten path and to resist opposition, on account of cost, to the policy of higher quality, efficiency, and long service life.

Principles and features of rolling stock design are discussed under sub-headings which include the durability of aluminium, its elastic properties, deflection, impact strength, proof stress, bearing strength, compressive strength, thermal expansion, design loadings, and geometry of the structure. The use of thin sections and the adoption of the most efficient structural shapes assist the designer in his quest for economy. The extrusion process makes possible the production of thin aluminium-alloy sections which may be given increased stiffness by the provision of bulbs or lips at the edges of members. Mr. Brockway comments that, with the new Rowen-Arc method of welding thin sheets, an all-welded aluminium coach is now a practical proposition and that its construction should be the next step to be taken in the advance of aluminium technology and railway rolling stock.

Although aluminium is only one-third of the weight of steel, deflection and buckling problems are posed by the low value of Young's Modulus, which prevents proportionate weight-saving in an aluminium alloy structure. A table shows the estimated savings which can be obtained, ranging from 20·5 per cent for a bogie covered goods wagon to 28·4 per cent for a four-wheel covered goods wagon. The designs considered are of a rigidity identical with that of existing steel wagons.

Examples are quoted of advantages gained from the use of aluminium in rolling stock design. In Germany, for instance, lightweight aluminium-copper alloy wheel centres have led, incidentally, to a considerable reduction in the noise level because of the higher elasticity of the material compared with steel. Additional justification for weight reduction in such parts has been shown during recent strain gauge tests on steel bogies when it was found that as much as 75 per cent of the stress values recorded arise because of the momentum effective of the bogie wheels and frame; only the remaining 25 per cent is caused by the weight of the coach.

From the economic viewpoint, accurate stress analysis can lead to real financial saving in the cost of rolling stock built from relatively expensive aluminium components. Mr. Brockway maintains that these savings must not in any way reduce the vital safety margins or mitigate against efficiency standards. In the past, stress analysis for rolling stock has tended to be empirical but now the imperative need for increased payload returns has necessitated a new approach to the subject. The development of the electronic digital computer has made possible the use of the matrix force method of stress analysis devised by Dr. J. H. Argyris, Professor of Aeronautical Structures, Imperial College, London. Use of matrix algebra in this way is almost essential to avoid the formidable task of computing the coefficients of the simultaneous equations normally involved, for instance, in the analysis of statistically indeterminate structures by classical methods in which the forces are treated as redundancies.

The advantages to be derived by using matrices lie in the systemisation of the computations which they evolve. Once the basic matrices are formulated the ensuing labour consists

only of the application of a few routine matrix operations. Reduced to this form the problems present ideal applications of the computer. But matrix algebra, Mr. Brockway maintains, must be applied throughout the problem from the basic principles to the calculations of the final stresses and deflections. He gives, in an appendix, an explanatory mathematical analysis which details the matrix-force method to the point where the matrices are arrived at for the analysis of a given structure.

With regard to the material itself, although those concerned with transportation already have access to a considerable amount of data accumulated by the manufacturers since 1894, the paper has a great deal of useful basic information on aluminium for the younger members of the Institution and those unfamiliar with the fabrication techniques involved. This is confined to a separate section and covers methods of blanking, forming, spinning, machining, forging, welding, and riveting. The two last-mentioned subjects are given very comprehensive treatment for a paper covering such a broad field. Surface finishes for aluminium products and the applicability of this material for service in tank wagons for various liquids are the subjects of further appendices.

British Transport Commission Traffic Receipts

MINERAL receipts of British Railways improved greatly during Period 10, the four weeks ended October 4. At £3,534,000 they compare well with £3,153,000 for the corresponding weeks of 1958, and with £3,144,000 for the preceding period of the current year. The increase reflects the revival in the steel and other industries on which mineral traffic depends. Railway merchandise traffics also improved, totalling £7,895,000, £1,000 less than for Period 10 of last year and £808,000 more than for Period 9. Total railway freight receipts were only £244,000 less than a year ago. For Period 9 they were nearly £1,000,000 less than for the corresponding weeks of 1958. Besides increased activity in commerce and industry, the improvement seems to show that the efforts made by the Regions of British Railways to capture merchandise traffic, are bearing fruit.

Receipts from road haulage, shipping, and inland waterways freight exceeded last year's figure by £312,000, compared with an excess of £206,000 for the preceding period. It would be interesting to know how much British Road Services contributed to this.

	Four weeks to Oct. 4, 1959		Increase or decrease	Aggregate for 40 weeks		Increase or decrease
	1959	1958		1959	1958	
Passengers :	£000	£000	£000	£000	£000	£000
British Railways ...	10,831	10,397	+ 434	110,853	110,222	+ 631
London Transport						
Road passenger services	4,437	4,344	+ 93	42,046	35,992	+ 6,054
Railways	1,794	1,808	− 14	17,942	18,766	− 824
Provincial & Scottish Buses	5,003	4,878	+ 125	47,842	47,284	+ 558
Ships	726	658	+ 68	6,707	6,155	+ 552
Total Passengers ...	22,791	22,085	+ 706	225,390	218,419	+ 6,971
Freight, Parcels & Mails:						
British Railways						
Merchandise & livestock	7,895	7,896	− 1	73,666	79,309	− 5,643
Minerals	3,534	3,153	+ 381	32,989	34,561	− 1,572
Coal & coke ...	7,939	8,631	− 692	82,405	93,784	− 11,379
Parcels, etc., by coaching train ...	4,325	4,257	+ 68	40,818	40,303	+ 515
Total Freight, British Railways	23,693	23,937	− 244	229,878	247,957	− 18,079
Others*	4,691	4,379	+ 312	42,233	41,241	+ 992
Total Freight, Parcels and Mails	28,384	28,316	+ 68	272,111	289,198	− 17,087
Total	51,175	50,401	+ 774	497,501	507,617	− 10,116

* Road haulage, ships, and inland waterways freight.

The seasonal drop in traffic resulted in British Railways passenger receipts of £10,831,000 for the period, against £13,307,000 for the previous four weeks. The total for Period 10 of 1958 was £434,000 less. In view of weather favourable to excursions, and of the many reductions in fares and other steps to gain passenger traffic, higher receipts might have been expected.

The total traffic receipts of the British Transport Commission for Period 10 exceeded the corresponding figure for 1958 by £774,000 (£706,000 from all passenger and £68,000 from all freight, parcels and mails services). The aggregate for 40 weeks, or more than three-quarters, of 1959 was £10,116,000 less than that for the same period of last year.

PERCENTAGE VARIATION 1959 COMPARED WITH 1958

	Four weeks to October 4	40 weeks to October 4
British Railways:		
Passengers	+ 4.1	+ 0.5
Parcels	+ 1.5	+ 1.2
Merchandise & livestock	—	− 7.1
Minerals	+ 12	− 4.6
Coal & coke	− 8.0	− 12.1
Total	+ 0.5	− 4.8
Ships (passengers)	+ 10.3	+ 8.9
British Road Services, Inland Waterways and Ships (cargo)	+ 7.1	+ 2.4
Road Passenger Transport, Provincial & Scottish ...	+ 2.5	+ 1.1
London Transport :		
Railways	− 0.7	− 4.3
Road services	+ 2.1	+ 16.8
Total	+ 1.2	+ 9.5
Aggregate	+ 1.1	− 1.9

Scottish Region Winter Passenger Services

THE most outstanding feature of the winter train services of the Scottish Region, operative from November 2, is the alteration to the West Coast day trains between Euston and Scotland. The " Royal Scot " and the " Midday Scot " become expresses of strictly limited formation, identical with that of the " Caledonian," and all three are to stop only at Carlisle in each direction and to have identical timings. The down " Royal Scot " is to leave Euston 45 min. earlier, at 9.5 a.m.; the " Midday Scot " 15 min. earlier, at 1.5 p.m.; and the " Caledonian " at 3.45 p.m., 20 min. earlier.

All three will have timings 20 min. longer between Euston and Crewe than those of the present 4.5 p.m. " Caledonian," to allow recovery time for engineering slacks caused by electrification work, but the same north of Crewe. With 5 hr. 26 min. to Carlisle, 2 min. there, and 107 min. for the 102.3 miles on to Glasgow, the overall time of each train will be 7¼ hr., 40 min. less than that of the " Royal Scot " last winter, and 49 min. less than that of the " Midday Scot." Southbound, the Carlisle stop of the 10 a.m. " Royal Scot " will be for working purposes only, and not to pick up passengers; Euston will be reached at 5.15 p.m., 15 min. earlier than last winter. The " Midday Scot " will leave Glasgow Central at 1.15 p.m., 15 min. earlier, and reach London at 8.30 p.m., 45 min. earlier. The 8.30 " Caledonian " will be 20 min. later into Euston, at 3.45 p.m.

There will still be a 9.50 a.m. from Euston to Perth; but north of Crewe this will run independently of the 10.55 a.m. (previously 11.20) from Birmingham to Edinburgh and Glasgow. The Perth train will call only at Crewe, Carlisle, Motherwell, Larbert and Stirling, and will reach Perth at 7.13 p.m., 57 min. earlier than last winter. The 10.55 a.m. from Birmingham will be into Glasgow by 5.47 p.m., an acceleration of 11 min. The 1.25 p.m. from Euston to Perth will start 10 min. earlier, but will be unchanged north of Carlisle. The 12.20 p.m. from Perth to Euston will start at 12.10 p.m., and arrive in London 8 min. later at 10 p.m. The night trains in each direction will be practically unaltered in timing.

A radical improvement is to be effected in the times of the day trains between Glasgow and Edinburgh and Liverpool and Manchester, largely by omitting intermediate stops. The 11 a.m. from Glasgow and Edinburgh will start at 10.50 a.m., and be into Manchester Victoria and Liverpool Exchange at 4.10 and 4.7 p.m. respectively, 32 and 35 min. earlier. The 4.5 p.m. from Glasgow and Edinburgh is to start at 4.30 p.m., and arrive in Manchester at 9.37 and Liverpool at 9.35 p.m., in place of 10.10 and 9.49 p.m., respective accelerations of 58 and 39 min. There will be no speeding up of the morning service in the opposite direction; but the 4.35 p.m. (formerly 4.25) from Liverpool and 4.12 p.m. (formerly 4.15) from Manchester will arrive in Edinburgh at 9.35 p.m. (formerly 10.10) and Glasgow at 9.45 p.m. (formerly 10.10). From Liverpool to Edinburgh is a gain of 45 min.

On the East Coast Route the later departure from Kings Cross of the morning " Talisman " (8.10 instead of 7.50 a.m.)

will bring that train into Edinburgh Waverley at 3.2 instead of 2.42 p.m. The starting time of the up " Aberdonian " from Aberdeen is to be advanced from 8.30 to 8 p.m., but the Kings Cross arrival will be only 9 min. earlier, at 7.41 a.m.

Inter-city diesel trains are to take over all the workings between Glasgow, Kilwinning, Ayr and Girvan, and two in each direction between Glasgow and Stranraer, the 5.10 p.m. and 9 p.m. " Irishman " southbound, and the 4.25 p.m. and 9.15 p.m. " Irishman " northbound; these trains will restore refreshment facilities to the Stranraer line for the first time since 1939. Other Stranraer workings will still be by steam trains between there and Girvan, where they will connect with the diesel trains for Glasgow. Through much of the day departures from Glasgow for Ayr and vice versa will be at the even hours and half-hours, and a greatly increased service will operate; as compared with six runs between Glasgow and Ayr in 50 to 65 min. there will now be 23 daily, and the previous steam times will be cut by from 5 to 10 min. Out of many tight point-to-point times the fastest will be that of the northbound " Irishman," from Ayr to Paisley, 33.7 miles in 34 min. A few of the Glasgow-Largs workings also will be taken over by diesel units. A diesel rail-bus will take over the local West Highland workings between Craigendoran and Arrochar, with an additional midday service each way.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of Correspondents)

Centralised Traffic Control

October 12

SIR,—I have read Mr. C. P. Lovemore's letter in your September 4 issue with some surprise. If the control from one central plant of various field stations and locations is not C.T.C., then what is ?

I, too, have read the re-appraisal of the British Railways modernisation plan and, after studying my railway atlas of the United Kingdom, have no hesitation in saying that C.T.C. is proposed.

I was sorry to see that Mr. Lovemore did not mention that he was familiar with C.T.C. in Rhodesia. I feel that far too little is known of our efforts in Central Africa. At the moment C.T.C. extends from Thomson Junction to Mpopoma East Junction on the line from Bulawayo to Northern Rhodesia, a distance of 213 miles. On the main line from Bulawayo to Salisbury it extends from Heany Junction (end of the double track from Bulawayo) to Gwelo, 93¾ miles. C.T.C. is authorised and under construction to complete the gaps between Umtali and Ndola and when complete 10 control rooms will control a section of 1,245 miles of colour-light signals. This must be a record.

As an old G.W.R. man, I have no doubt that the present Western Region signalling officers will adapt C.T.C. to their requirements and soon extend it on lines such as the Henley branch, and the former Midland & South Western Junction line, to name but two.

Yours faithfully,

D. H. CONSTABLE, M.I.R.S.E.,
Signals & Communications Engineer, Rhodesia Railways

P.O. Box 604, Bulawayo, Southern Rhodesia

Shortlands-Bickley Reconstruction

October 19

SIR,—I assure your readers that in practice the new layout between Shortlands and Bickley does reduce the overall conflicting movements considerably—enough for us to run 337 passenger trains daily through Bromley South in the new winter timetable, plus continental, parcels, and freight services and empty stock.

I will not weary your readers with a detailed comparison, except to say that the fouling movement mentioned by Mr. Wootton in your October 2 issue occurs far less now, in spite of what he thinks, because there are more points at which a train can cross the tracks to the particular one it is scheduled to use.

The new arrangement enables us to maintain an even flow of traffic through the area, not merely for the off-peak fixed interval service (which actually totals 13 ordinary passenger trains and not 16 as suggested), but during the peak travel period, when density is very much greater.

Please let us retain a sense of proportion over this whole matter. The benefits conferred on the majority of passengers by the additional flexibility which the new layout provides surely outweigh the inconvenience to the people who have to change trains. I am not claiming immunity from criticism, but asking that we should be judged on a realistic basis of profit and loss in overall service to users of the line.

In the same issue Mr. S. W. Gittins mentions the review of the branch line between Bexhill West and Crowhurst. The word review is a precise one. We are examining, without preconceived notions, the position of this line and its future prospects in the light of all circumstances, including those Mr. Gittins mentions, to decide what shall be done with it.

It would be silly to say now that we will retain the service whatever the merits of the matter. But there are a number of possibilities that are being examined, including that of finding some more economical basis on which to provide this particular link.

Yours faithfully,

F. D. FAULKNER,
Public Relations Officer

British Railways, Southern Region, Waterloo Station, S.E.1

Diesel and Electric Traction

October 15

SIR,—Looking at what is happening in British Railways Western Region, one might be forgiven for being critical of the rosy picture of diesel operation in the U.S.A. presented by your correspondent in your October 9 issue. In Britain we have the imposition of a rigid speed limit, the deceleration of the " Bristolian," and now an order for more diesel locomotives. These last have 35 per cent more than the power originally considered ample, and cost well over £100,000 each. They are the only hope, it seems, of giving an improved performance over the ancient " Castle " class 4-6-0s. It is hardly a success story.

In the U.S.A. diesel traction started in 1925. In 1948, a mere 23 years later, your correspondent tells us, the American railways " were convinced that diesel motive power was more efficient and more economical than either steam or electric power for main line working." Yet they went on building steam power for a further six years, and 10 years later one of the best managed railways was fighting hard to retain steam.

In the event, the diesel won outright at a cost to the railways which worked out at some £3,000 million over the period 1948–59. For the suppliers of equipment it was a period of thriving business. For the railways the period saw, among other things, the virtual loss of all their passenger business and a drop of 8 per cent in the best freight traffic. On what was left, charges had to be pushed up to give an increased revenue of 11 per cent, which could not overtake a 14 per cent rise in operating costs. There was a slight increase in overall speeds. But as motive power was almost entirely new, as £1,000 million had been spent on signalling, marshalling yards, and track generally, and on items tending to increase speeds, and as most of the small shunting movements had been dispensed with, the inability to reach a train speed between terminals of a modest 20 m.p.h. from the initial 16.2 m.p.h. with steam traction indicates weakness somewhere.

The answer is surely given by your correspondent when he refers to the " average " diesel of 2.75 units as " this powerful machine." The locomotive in question would weigh around 320 tons and cost £250,000. It would have an output at the drawbar slightly below that of the smaller types of European Bo-Bo electric locomotives.

Yours faithfully,

L. IRVINE-BROWN

Tilston, Malpas, Cheshire

THE SCRAP HEAP

Ministers of Transport

Ernest Marples	1959
Sir Eric Geddes	1919–1921
Viscount Peel	1921–1922
Earl of Crawford	1922
Sir John Baird	1922–1924
Harry Gosling	1924
Wilfred Ashley	1924–1929
Herbert Morrison	1929–1931
P. J. Pybus	1931–1933
Hon. Oliver Stanley	1933–1934
L. Hore Belisha	1934–1937
E. Leslie Burgin	1937–1939
Captain Euan Wallace	1939–1940
Sir John Reith	1940
Lt.-Colonel J. T. C. Moore-Brabazon	1940–1941
Lord Leathers	1941–1945
Alfred Barnes	1945–1951
J. S. Maclay*	1951–1952
Alan Lennox-Boyd*	1952–1954
J. A. Boyd-Carpenter*	1954–1955
Harold Watkinson*	1955–1959

*Minister of Transport & Civil Aviation

On formation of the Conservative Government in 1951, Lord Leathers was appointed Secretary of State for the Co-ordination of Transport, Fuel & Power. No successor was appointed on his retirement in September, 1953.

Gourmet

My friend Colonel "Jock" Purge-Bloodbath, known throughout Kenya as the "Mighty White Hunter of Muthega," described "a rather unusual thing which happened to me on safari in '48. A fine bull rhinoceros suddenly broke cover at 80 yds. and charged straight for me. I fired with no effect .... The bullets served merely to infuriate the animal, which thundered on regardless, its eyes narrowed to slits of hatred. As luck would have it, I had in my haversack a British Railways packed luncheon which, with great presence of mind, I spread hastily on the ground before me. The beast paused, sniffed, ate a processed cheese sandwich and was half-way through a pork pie when it expired. Wasn't used to such rich food, of course."—"*Peter Simple*" *in* "*The Daily Telegraph.*"

The Lausanne Metro

The first funicular in Switzerland was opened in 1877, connecting Ouchy, on the Lake of Geneva, with the centre of Lausanne and passing by the station of the then Swiss Western Railway. In 1879 a shorter parallel funicular was built from the station to the upper terminal in the city. Hydro-electric power was used to move the cables. A 15 min. service eventually was run on the main route. These arrangements had become inadequate by the end of the last war. Several modernisation plans were considered, including altering the gauge to metre and doubling throughout. Eventually the line was altered to electric rack-and-pinion operation. The passing place on the main section was retained, with automatic actuation access doors to platforms, and of points and signals. A 7½ min. service is now given. The comfortable and brightly painted rolling stock is much appreciated by passengers. The line is now known officially as the "Métro."

Personal Transport

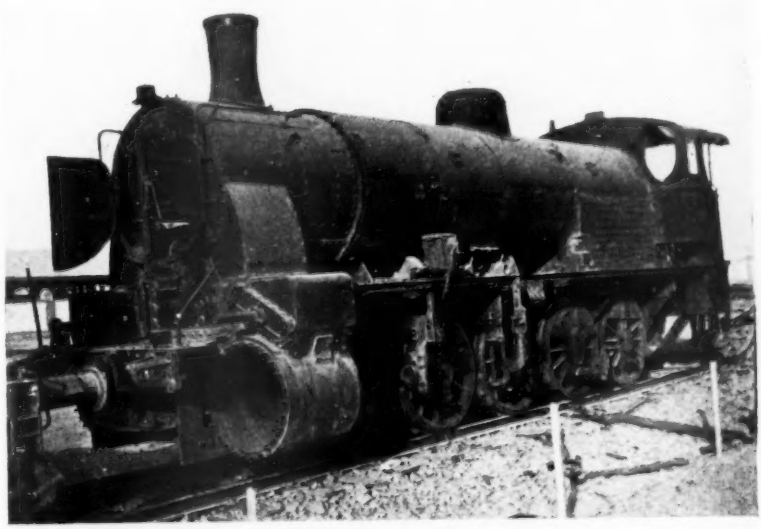
A Conservative Party announcement states that Mr. Ernest Marples, the new Minister of Transport, "finds a bicycle the handiest means of transport."

Shoeblacks and the Railways

Shoeblacks were rapidly disappearing from the streets of London, *The Evening News* stated in October, 1909. It added that cleaner streets, tube railways, and wax polishes had sounded their doom.

Czech-Built Locomotives in Persia

Reference was made in an editorial article in our May 22 issue to the amalgamation in 1928 of the Czechoslovak locomotive building plants, First Czecho-Moravian with Breitfeld Danek, as CKD. A correspondent states that during the last war, when Transportation troops of the Royal Engineers were working a portion of the Trans Iranian Railway (now part of the Persian State Railways), he noticed two 0-10-0 locomotives. They were apparently built in 1915 for one of the railways in the Austro-Hungarian Empire, which included what is now Czechoslovakia. The makers' number plate, mounted on the side of the domes, bore in German and Czech the inscription "Machine Corporation, formerly Breitfeld, Dane & Co., Slány." The latter town, of which Schlan is the German name, is in the province of Bohemia, some 18 miles north-west of Prague. How the locomotives came to Persia is not known. One of them had a very soft blast and the blower had to be used constantly to maintain steam. It was confined to shunting duties.



One of two 0-10-0 *locomotives built in Czechoslovakia, found on the Trans-Iranian Railway during the last war*

Number plate, which had been mounted on side of dome

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Preparing for Diesel Operation

In preparation for the introduction of diesel operation in South West Africa, a team of six S.A.R. technicians are at present in the United States doing a familiarisation course on the class "32" diesel-electric locomotives at the Erie, Pennsylvania, works of the International General Electric Company. The South African Railways recently ordered 115 of these locomotives at a cost of some £11,000,000. The first is expected to be delivered in November.

Union Anniversary Celebrations

"A century of railways" will be the theme of celebrations to be held next year by South African Railways in conjunction with the Union's Fiftieth Anniversary Festival. The railway programme includes competitions and exhibitions and will reach its climax on Union Day, May 31, when three centenary trains will converge on Bloemfontein. They will leave the following day for Cape Town, Durban, and Pretoria, carrying distinguished guests and officials.

INDIA

A 6,500-ton Mineral Train

In the process of testing the South Eastern Railway as suitable for heavy and long mineral trains, a 6,500-ton iron-ore train was recently run from Gua to Burnpur. It consisted of four diesel locomotives, four brakevans and 74 bogie ore wagons. Communication was maintained between the front and rear locomotives by radio telephone. There is no information as to how the four units were distributed, but they would presumably be in pairs. Gua is the terminus of an iron-ore branch taking off the old Bengal-Nagpur main line at Raj Kharsawan, near Sini, and is 247 miles from Calcutta, Howrah; it is in the Chaibasa area. Burnpur is four miles nearer to Howrah than Asansol on the Eastern Railway main line. The train would have to traverse the 65-mile branch and then a further approximately 105 miles onwards via Chandil, Adra and Asansol, or about 170 miles in all. The time taken was 13¾ hr., probably due to delays with this 3,600-ft. train; the normal ore trains have only 3,400-ton gross loads and are little more than half the length of this test train.

WESTERN AUSTRALIA

Track Re-laying

The Government Railways laid 111 miles of new track during the last financial year. This is a record length and is at least 25 per cent more than the amount of new track laid in any year since the track rehabilitation programme began in 1953. Besides the new track, which comprised more than 106 miles of 82-lb. welded rail, over 70 miles of recovered rail was cropped, welded, and relaid in lesser main lines and in sidings during the year.

Concurrent with this work nearly 250,000 cu. yd. of ballast and 500,000 sleepers were used. Banks and cuttings in the track also have been widened to improve drainage. To date, the entire Goldfields railway, the South Western main line as far as Brunswick Junction, and the Great Southern Railway as far as Narrogin have been relaid with heavy 82-lb. welded rail. Similar work is also progressing on suburban lines.

NEW ZEALAND

Government Policy for Railways

Mr. M. Moohan, Minister of Railways, has told the House of Representatives that Government policy was to streamline the railways as far as possible. The question of making the railways pay was a question of determining the utility of the system and what part it played in the defence of the country. Mr. Moohan said that he had been told by his officers that the estimated deficit for the coming year would be almost £2,000,000. Last year it was brought down to £764,000.

The factor to be accepted first was that there was great competition in transport. A lot had been done in the last 12 months to speed up the railways freight service. The greatest competition came, in passenger services, not from buses, but from the air. Mr. Moohan said it was true that six branch lines had been closed. They were not closed because they lost money. On that basis he would have to close down the whole railway system. They were closed because they were not used, or used so little that he could not justify the expenditure necessary to keep them in order.

The Minister added that to raise railway fares would simply put the railways more and more out of business. The backlog of work to be done on the railways was terrific and there was a large amount of money to be spent. Some of the stations were 100 years old.

In the last few months he had set up a consultative committee consisting of the presidents and secretaries of the four railway organisations, the management and himself to discuss broad policy on how best the system could be made to fit the requirements of the people. He was positive that good would come of it.

ARGENTINA

Measures to Eliminate Railway Deficit

In a recent statement on the financial position of the country, the Minister of Economy, in that part of his speech related to the railways, announced that a practical solution of present-day difficulties, tending towards the reduction and eventual elimination of the enormous deficit, would be found shortly as a result of intensive studies being carried out by the Ministry of Public Works & Services and the Transport Secretariat. A partial picture of the measures to be taken was given by the Minister. One of these referred to the elimination of a considerable percentage of employees, who would be transferred to a new and separate entity to be formed with the object of reconstruction of the lines over a period

Carriage of Big Game by Rail

Specially constructed wooden enclosure erected on a metre-gauge flat wagon for carrying a young giraffe from Nairobi to Mombasa, East African Railways

of years. The cost of this would be financed on a long term basis, outside the general budget, so that a considerable proportion would be borne by the next generation of Argentines.

BRAZIL

Exports of Railway Materials

By arrangement with the federal authorities exports of production goods will be financed in future so as to facilitate sales abroad. The first financed export consists of railway materials (wagons, bogies, couplers and so on), valued at U.S. $3,500,000 and sold to Argentina by Companhia Brasileira de Material Ferroviaria (COBRASMA). A private financial agency will handle the operation, advancing the equivalent in cruzeiros to COBRASMA at the free rate of exchange and receiving the dollars from Argentina within five years.

UNITED STATES

Erie-Lackawanna Co-ordination

The consolidated operation of the Erie and Delaware, Lackawanna & Western Railroads began on September 1, though the two lines still retain their separate identity. One of the first results was the abandonment of 75 miles of Lackawanna double track between Binghamton and Corning, and concentration of all traffic on 76 miles of Erie double track between the same points, with 1¾ miles retained of the previous Lackawanna route. New track connections between the two lines have been made at Corning, and also at several other points to give access to yards and works sidings. The trackwork and new signalling have cost $1,630,000, but a saving in the region of $1,000,000 annually is expected as the result of eliminating these duplicated facilities.

Lackawanna trains are now using the Erie passenger stations at Elmira, Endicott, Owego and Waverly, and Erie goods stations at various points, while Erie trains are using three Lackawanna freight depots. At Binghamton the two companies are continuing to use their own separate passenger stations for the time being. The first stage of the consolidation was reached more than two years ago, when the passenger and freight operations of both companies at the New York end of their main lines was concentrated on the Lackawanna terminal facilities at Hoboken.

Great Salt Lake Causeway

The Southern Pacific Railroad has taken possession of its new causeway across the Great Salt Lake, Utah, roughly a year ahead of the scheduled date of completion. Eleven barges and several smaller craft have been engaged continuously in depositing on the lake bed the 43,500,000 cu. yd. of rock, gravel and sand needed.

SPAIN

Higher Fares and Rates

Railway goods rates were substantially increased in August, and a 40 per cent increase in passenger fares was introduced on October 10. It is believed that this later date was chosen so as not to affect the summer tourist traffic. Passenger fares were last increased by 35 per cent in April, 1957.

These increases are said to be justified with a view to adapting the prices of public services to actual cost prices within the framework of the stabilisation policy now being adopted. It is intended to do away with subsidies thus reducing state expenditure. On the other hand, there is some concern as to the effects of the higher goods rates on the price of certain foodstuffs. It is pointed out in this connection that certain railway goods rates were increased early in August, 1958; some three weeks later the price of bread rose by 20 to 25 per cent.

ITALY

Higher Railway Fares

Passenger fares on the Italian State Railways are to be increased; first class fares by 4 per cent, and second class fares by 12 per cent. The difference in the rate of increase is justified, according to a recent announcement by the Italian Minister of Transport, by the wide discrepancy in the fares of the two classes which has existed ever since the abolition of the third class. This discrepancy had resulted in the overcrowding of the second class and in limited use of the first class which in turn had led to non-rational utilisation of the passenger rolling stock.

The 1959-60 budget of the Italian State Railways envisages a working deficit of Lire 37,900 million, Lire 3,000 million below the deficit which had been calculated for the 1958-59 working year.

FRANCE

River Under Railway Tunnel

During the lowering of track in the Rang Tunnel on the Besançon-Belfort line, an underground river was found under the tunnel floor over nearly 200 ft. An arch opening under the track, through which the river flows, was found to be widened after the track level was lowered. Two supporting concrete walls were built at the centre, about 8 ft. 3 in. apart. These walls being linked every 5 ft. by cross-beams, each formed of three rails.

Publications Received

Railway Training in the United Kingdom. —A 48-page booklet obtainable free on application to the Ministry of Transport & Civil Aviation, Berkeley Square House, London, W.1, describes the training facilities in the United Kingdom available for railway administrations in the region of the United Nations Economic Commission for Asia (E.C.A.F.E.), which embraces most countries in Southern and S.E. Asia, besides China and Japan. The six sections give full information on the facilities arranged by the British Transport Commission in various departments of British Railways; those offered by British industry, including some leading manufacturers of locomotives, rolling stock, and electrical and signal equipment, and by the British Iron & Steel Federation; courses available under the Colombo Plan Technical Co-operation Scheme; combined courses in which trainees can undergo training with one or more manufacturers and complete their course by a short period with British Railways; the Federation of British Industries Overseas Scholarship Scheme; and specimen subjects for which training may be needed. Among the particulars given are the types of trainee accepted, payment for training (where demanded), responsibility for accommodation, and special equipment and clothing required. The large number of training facilities embraces the many subjects in which British Railways and British industry excel as exponents of modern methods, manufacturers and organisers.

Motor Graders. — LeTourneau-Westinghouse Company, Peoria, Illinois U.S.A., has published a 16-page brochure " More for Your Money " describing the L-W range of motor graders. The brochure is in three colours with many illustrations including diagrams showing the operational and design features of six models ranging in power from 80 to 190 h.p. Two Power-Flow models are offered with full torque-converter transmissions. It is explained how the operator can change the moldboard from a deep ditch cut to a high bank position or *vice versa* in less than a minute without leaving the cab. For extended reaches or working round obstructions the blade can be moved sideways left or right as much as 26½ in. in 10 sec., using optional-extra power control while the grader is in motion. Other optional attachments illustrated include an Elegrader which ploughs and casts material or loads into another vehicle, a snow plough, a snow fan wing attachment, a scarifier, and a bulldozer. Road speeds of the L-W grader are up to 26 m.p.h. Copies may be obtained through local L-W distributors.

Il Museo Ferroviario a Roma Termini (*The Railway Museum at Rome Central Station*). By L. Jannattoni. 64 pp. 8½ in. x 6¼ in. Illustrated. Obtainable from the museum. Price 350 lire.—The Railway Museum at Rome, formally opened in 1954, is one of the finest of its kind and admirably arranged. The author relates how exhibitions in Italy resulted in accumulation of full-size items of railway equipment, models and documents, the nucleus of the present collection. The book lists all items and contains much bibliographical and other information, some relating to similar museums outside Italy. There are some interesting illustrations. The museum authorities have issued publications on various aspects of the working of the Italian State Railways, most of which have been noticed in these columns.

The Problem of the Level Crossing

Changing conditions have resulted in new trends in methods of protection

(By a correspondent)

IT was announced last February by Mr. Harold Watkinson, the then Minister of Transport & Civil Aviation, that the Government was to pay £3,000,000 to the British Transport Commission in connection with expenditure incurred in providing bridges or otherwise improving level crossings. This was recognition that the Commission should not be solely responsible for such liabilities where conditions have altered as a consequence of considerable changes in the character of road traffic.

Protection of public level crossings in Britain is covered mainly by an Act passed in 1845, when conditions on the roads were totally different from those obtaining today. The Minister pointed out that to relieve the Commission of the liabilities thus imposed raised complicated issues and that the grant, of which a third was regarded as covering 1958 and the rest of the present year, was an interim arrangement, until legislation could be brought in directed to altering the existing conditions for the better.

Of late years the crossing problem has attracted a great deal of attention and much thought has been given to it; the Commission made it a feature in certain wage negotiations. Although at public crossings accidents rarely occur, they are increasingly a source of delay and annoyance to all concerned. In June, 1958, there were over 4,250 public crossings, and these, with the 21,300 "occupation" and "accommodation" crossings, at which railway obligations are limited to providing efficient gates and means of fastening them, gave a crossing to about every ¼ mile of route operated by British Railways. The cost of manning public crossings in accordance with statute amounted to some £1,000,000 annually, to which had to be added maintenance charges, often considerable in the case of the heavier types of gates essential at many locations. Such expenditure was absolutely uncompensated from any source of revenue.

Shortage of Gatekeepers

It was becoming difficult to find reliable staff to whom the responsible work of gatekeeping could be entrusted. Powers were obtained as long ago as 1947 to substitute—but at one specific location only—lifting barriers, well known on the Continent and in America, for ordinary gates. This was done. In 1954, the Minister received powers to approve such a course generally, as he should see fit, but the obligation to keep attendants at public crossings was not then abrogated.

It is not surprising, therefore, that for some time past British Railways have been giving very close attention to this serious question. In October, 1956, a White Paper presented to Parliament by the Minister of Transport & Civil Aviation included reference to the "statutory provisions which require attendance at all public level crossings," and asked that they be reviewed.

In the summer of 1956, as a result of consultations with the Commission and the Railway Inspectorate, the Minister sent a working party, headed by Colonel D. McMullen, accompanied by another Inspecting Officer of Railways of the Ministry of Transport and representatives of the Highways Department of the Ministry, and of the Commission, to visit crossings in France, Belgium, and Holland, and 46 installations were inspected.

The party's report was issued as a Government publication in 1957. It accepted the principle, laid down by the Minister in his foreword to it, that there must be no lowering of the standards of safety already recognised as essential but stated that certain methods, successfully applied on the Continent, could with advantage be introduced in Britain and that lifting barriers appeared suitable for almost all public crossings. Remote control, however, was not advocated except in certain closely defined conditions and with very light road traffic.

Half-Barriers

For automatic working half-barriers, controlled by track circuits, and so on, were recommended and described in some detail. It was also recommended to make trials with them at selected places. The half-barrier removes the danger of a motorist becoming trapped on a crossing. (No experiment appears to have been made with exit barriers closing diagonally slightly later than the entrance ones.) Although in Belgium, for example, many crossings have been converted to the open type, with warning bells and lights only, such were not recommended save again in exceptional circumstances, where traffic is light and rail speeds not over 10 m.p.h. Stress was laid on the necessity of educating the public, especially pedestrians, in connection with the introduction of such new forms of crossing protection.

The report also contained recommendations on the forms and application of warning signs, provision of cattle guards and other relevant matters.

Further Legislation

By an Act which became law in July, 1957, the Minister was given wide powers, enabling him to sanction at public crossings any of the measures, or any combination thereof, envisaged in the report, opening the way at last to the effecting of considerable economies. The Minister has issued, in consultation with the Commission, provisional requirements covering the use of lifting barriers, variously controlled, and open crossings. Experiments are now being conducted. The main problem now remains to develop an installation which shall be fool-proof, safe and reliable in British weather conditions; for this purpose lengthy trial involving expenditure bringing no immediate return will be required. The cost of such protection is said to vary between £2,000 and £4,000 for each installation. Common features of many economy measures already included in the modernisation scheme are delay until development is complete and capital expenditure more than offsetting immediate benefits. Automatic barriers have been proved, as for example in Holland, to bring immediate benefit to road users by reducing the average of delays at them from several minutes to some 45 sec., as the working is adjusted to such fine limits. It seems logical, therefore, for costs to be met partly by railway and partly by road funds. The Commission already has a heavy capital expenditure programme and Lord Derwent, Chairman of the British Road Federation, appealed recently for increased funds for road repairs, declaring that such were lower this year than for 1957-1958.

Private Crossings

It seems unlikely that there will be any alteration in existing practice in connection with "accommodation" and "occupation" crossings, where, as stated, railway responsibility is limited to simple essentials. A case at law (Hazell *v.* British Transport Commission and another, Queen's Bench Division, November 29, 1957) has made it clear that such measures are held to be adequate. A farm tractor was hit by a train during a fog and its driver fatally injured; his representatives took action against the Commission and the engine driver under the Fatal Accidents Acts but no negligence on their part was established.

As only maintenance costs are involved it is doubtful whether the Commission will consider making alterations at these crossings for the present, except where special traffic conditions exist. However, in the case of the accident at Funtham's Lane crossing (see *The Railway Gazette* for December 5, 1958, page 693) the Inspecting Officer recommended the taking of powers to apply automatic half-barriers at such crossings where local conditions appeared to render something of the kind desirable.

NEW WESTERN REGION RAIL WELDING DEPOT.—Work has commenced at Hookagate, on the Shrewsbury-Welshpool line, on a new rail holding and flash butt welding depot which has been planned to meet British Railways, Western Region, increased demand for long-welded rails. The new depot will receive rails direct from the manufacturer's mills, for subsequent welding into lengths of up to 300 ft. Later it is planned to produce rails of up to 900 ft. on the site. A temporary rail holding depot at present in use at Crewe Bank, Shrewsbury, will be closed.

ELECTRIC RAILWAY TRACTION SECTION

Extension of French D.C. Electrification

WORK now in progress on electrifying the French National Railways, Paris-Lyons-Marseilles main line south of Valence at 1,500V. d.c., is part of the Lyons-Nîmes scheme authorised in 1955. Avignon was reached this autumn, as recorded in our September 18 issue. After continuing down the main line to Tarascon the conversion will leave the main route to continue westwards over the Tarascon-Nîmes line to connect at Nîmes with the existing electrified system of the South-Western and Mediterranean Regions. At Tarascon the electrification is only 59 miles from Marseilles. Closing this gap is the logical next step. It is planned to carry this out in 1960-62. As in the original Paris-Lyons scheme, it is proposed to take maximum advantage of the conversion by diverting much traffic to the main line from a paral'el route not electrified, from Avignon to Marseilles *via* Cavaillon, Miramas, and Port-de-Bouc. In the Marseilles area electrification will extend to Marseille-Blancarde on the main line to Toulon and the Riviera, and will also cover various lines serving Marseille-St. Charles and installations in the port. These lines total 13½ miles. In this area there are 10 tunnels, of which six need enlargement to accommodate the overhead equipment, but two on the main line between Tarascon and Marseilles, namely Nerthe (three miles) and Saint Louis (524 yd.) require no extensive alteration. Out of 58 overbridges, 27 will remain unchanged, 22 will be demolished and rebuilt, and at the remainder the track will be lowered, structures raised, or partial reconstruction undertaken.

Three of the six new sub-stations between Tarascon and Marseilles will be served from nearby 60-kV. switching stations of Electricité de France and two can be connected to an existing E.D.F. overhead line at the same voltage by short overhead spurs. At Marseilles the S.N.C.F. sub-station will be fed from two E.D.F. switching stations by underground cables. The average spacing of the railway sub-stations will be 10—11 miles. Five of the six will have an installed capacity of 4,000 kW. and the sixth of 8,000 kW. All will be under centralised supervisory control from Marseilles. A similar form of catenary system to that on the rest of the route from Paris will be provided on the main line. It consists of a compound catenary and double contact wire giving an equivalent copper section of 0·74 sq. in., supplemented on some sections by a copper feeder of 0·24 or 0·4 sq. in. cross section. In Miramas marshalling yard and at stations in the Marseilles area either a simple catenary with one contact wire or a tramway type overhead system with contact wire only, will be erected. Automatic colour-light signalling is already in course of installation between Lyons and Marseilles, and the requirements of electrification will be met mainly by additional signals to protect sub-station sidings, others to give warning automatically of approach to a section where traction current has been switched off, and certain changes at stations where layouts will be modified to suit the new pattern of traffic under electric working. A maximum speed of 87 m.p.h. will be allowed over most of the main line.

It is expected that motive power requirements will be met by ordering 16 additional express and 24 mixed-traffic locomotives. By the time the scheme is in operation it seems likely that the new Bo-Bo " 9400 " mixed-traffic class with single-motor bogies will be in service, and so this 1,500V-d.c. scheme will reflect a trend first seen on the 25-kV, 50-c/s lines of the S.N.C.F., just as the latter have been able to take advantage in their more recent locomotives of constructional practices first put to the test in the 80-ton high-speed Bo-Bo prototypes for the original Paris-Lyons electrification.

Conversion at 1,500 V. d.c. from Avignon to Tarascon and Nîmes will provide the only link south of Paris between the two main groups of lines electrified on this system. It will afford through electric working between Geneva and Narbonne (whence a 70-mile steam-worked section branches off to the Spanish frontier at Cerbère/Port Bou) Toulouse, and the Spanish frontier at Hendaye/Irun on the Bay of Biscay. It seems unlikely that the main line along the Riviera, from Marseilles via Toulon, Cannes and Nice to Ventimiglia, will be converted at 1,500 V. d.c. Goods traffic is reported not to be heavy. Passenger traffic consists mainly of heavily loaded long-distance trains in the summer and winter seasons, with a certain amount of interurban traffic conveyed by diesel railcars. Consideration is being given to a.c. electrification. A frequent service of local trains might result in a profitable traffic in the Cannes-Nice-Monte Carlo-Mentone area. At Ventimiglia connection is made with the Italian State Railways system converted at 3,700 V., three-phase, 16⅔ cycles.

Electrification Progress in Japan

NO time was lost by the Japanese National Railways in applying a.c. electric traction techniques to their 3-ft. 6-in. gauge system as soon as the advantages of a.c. electrification for main lines were shown by experience on the French National Railways, which converted the branch from Aix-les-Bains to La Roche-sur-Foron at 25 kV., 50 cycles, in 1950-51. In July, 1953, the J.N.R. set up an a.c. electrification sub-committee, and in October, 1954, some 19 miles of the Senzan branch of the Tohoku Line were electrified with single-phase a.c. at 20 kV., 50 cycles. This experimental application was the subject of an article in our November 23, 1956, issue. The success of these experiments resulted in a decision in favour of full-scale a.c. electrification.

The progress made and plans for conversion of further lines are described in an article in the current issue. Considerable use is made of dual-system locomotives and motor coaches for working over both a.c. and d.c. electrified lines, because of the large mileage already electrified or in course of electrification at 1,500 V. d.c. Much of the d.c. equipment, locomotives, and rolling stock has a long useful life, even although the sections electrified on the d.c. system eventually will be converted to a.c. Japanese suppliers of locomotives and electrical equipment were quick to use the experience gained with a.c. traction to develop export business.

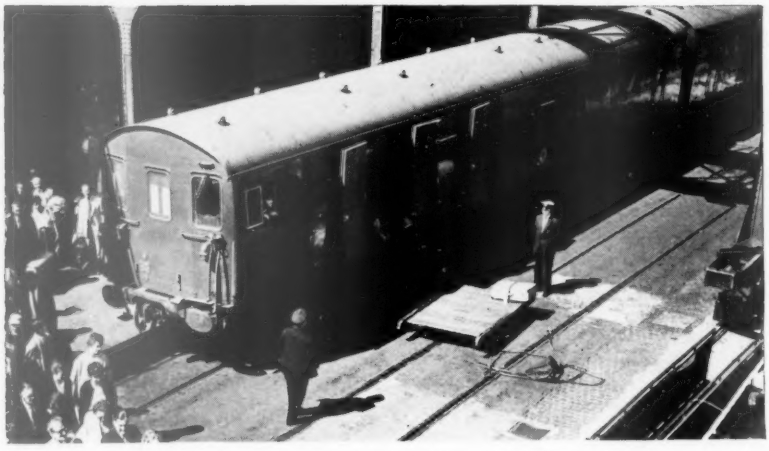
Although the J.N.R., like the South African and, before the war, the Netherlands East India State (now Indonesian) Railways in Java, have achieved high speeds on the 3-ft. 6-in. gauge with steam and electric haulage, the gauge generally has been considered too narrow to allow of speeds approaching those possible on the 4-ft. 8½-in. gauge lines. The extent to which the limits hitherto deemed advisable on the narrower gauge were justified depends largely on the track and factors such as the suspension of the rolling stock, signalling, and amount of single line sections. Experiments carried out last summer in Japan show that 100 m.p.h. with smooth riding was attained on the 3-ft. 6-in. gauge with a six-car train of two 775-h.p. three-car sets on the Tokaido main line, electrified on the overhead system at 1,500 V. d.c. The track over which runs were made is long-welded 100-lb. rail laid on baseplates, rubber pads, and concrete sections. Special attention was paid to the state of the overhead equipment, but otherwise the runs are reported to have been made in practically normal conditions. Apart from vibration caused by irregularity in the contour of wheel treads, which was rectified by re-turning, riding at speed is reported to have been satisfactory.

Electrification at high voltages of most lines is accompanied by considerable difficulty in obtaining clearances through existing overline bridges, tunnels, and so on, and in avoiding interference with electrical signalling and telecommunications. The J.N.R., in electrifying from the outset the 350-mile standard-gauge trunk line now being built between Tokyo and Osaka, is starting fair. It will be interesting to see in due course the extent to which expenditure of money and materials has been lessened in consequence.

Proposals now under consideration by the management of the J.N.R. envisage elimination of steam locomotives, which now number some 4,500, by 1975. A notable feature of the plan is the relatively large numbers of electric and diesel locomotives and of ordinary passenger coaches, compared with electric and diesel motor multiple-unit stock, presumably so as to afford maximum use of locomotives on both passenger and goods trains.

Motor Luggage Vans for the Southern Region

Electric motor vans with sufficient battery power to be self-operated on non-electrified lines



Two motor luggage vans in operation on the quay at Dover

AN essential part of British Railways, Southern Region, Continental boat train services is the conveyance of mail and registered baggage under customs seal. The passenger trains therefore normally include vans in their formation, always marshalled at the London end of the train and moved on and off the quayside at the ports by shunting locomotives.

When, following electrification, it was decided that almost all boat trains should be made up of multiple-unit sets, a method of handling this traffic had to be devised. Ordinary vans attached to the multiple unit trains were ruled out, even if fitted with air brakes, for two reasons: they would reduce the power to weight ratio of the trains, which would make them unable to keep up with other trains on the line, and, in the London direction, the train could not be driven from them.

Motored bogie luggage vans are, therefore, being built with driving cabs at each end, two for the first phase of electrification which went into service in June and eight more for the second phase, when all boat trains except the " Golden Arrow " and the " Night Ferry " will be made up of multiple-unit sets.

Each van is the same length as the coaches of the multiple units, 64 ft. 6 in. over body ends and, apart from the two driving cabs and a small guard's compartment at one end, the whole of the floor space is given over to the conveyance of baggage, with a partition dividing the baggage compartment into two unequal sections. Three pairs of wide double doors are fitted on each side, which are wide enough to take pallet trucks. Floors have been strengthened to allow trucks to manœuvre inside the vehicle. The general construction and the bogies are identical with those of the other electric coaches built for this scheme.

Battery Power

The power and brake equipment are the same as in the other coaches, but with important additions in each case. To avoid the use of shunting locomotives at the ports a 230-Ah. traction battery is installed so that the vans can move under their own power on to the necessarily unelectrified quayside lines. This in turn opened the way to profitable use of the vans as light locomotives when not needed for boat train traffic, which is very peaky. In this role they are able to haul trains of up to about 100 tons and vacuum brake equipment has been fitted to control the brakes on the trailing load. The brake on the van itself is controlled in the normal way from the air and electro-pneumatic driver's brake valve and a special valve then makes the train pipe vacuum vary in step with the brake cylinder pressure. Another newly-developed valve assures the emergency features.

The traction battery is charged from the 200-V. output of a motor-generator set driven from the 750-V. line and when

(*Continued on page* 335)

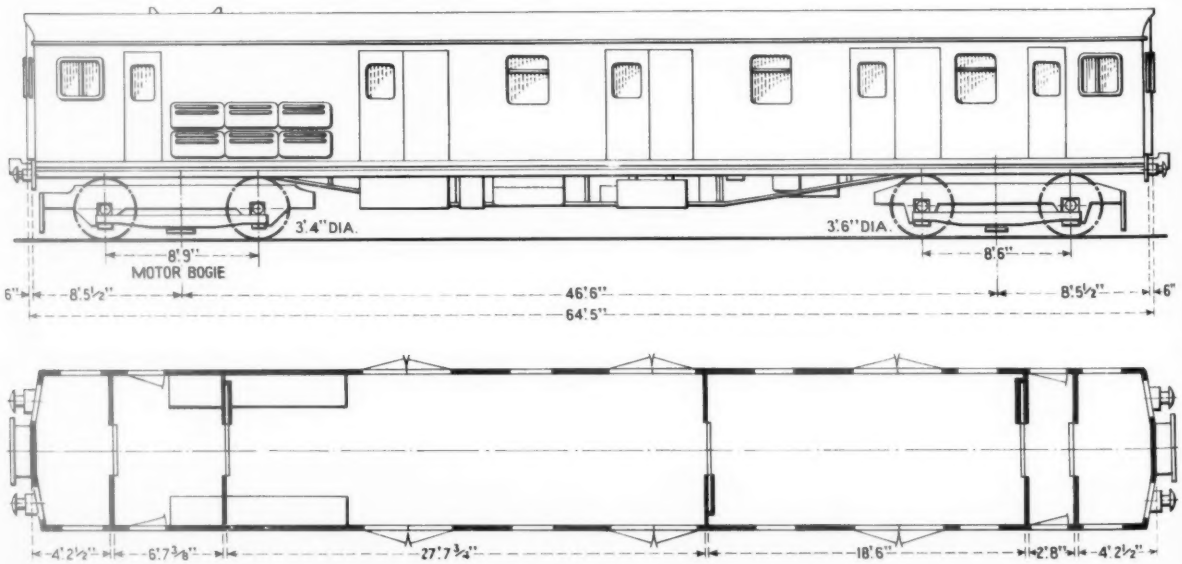


Diagram showing principal dimensions of motor luggage van

Electric Trains for the Manchester-Bury Line

London Midland Region two-car sets built at Wolverton Works

THE 26 two-car electric trains being built at British Railways, London Midland Region, Wolverton Works for the Manchester-Bury electrified line consist of a motor open second brake and a driving trailer composite car, designed to carry 16 first class and 162 second class passengers. There is a driving cab at each end of the two-car unit, with a luggage and guard's compartment at the trailing end of the motor car.

Each vehicle is 64 ft. $\frac{5}{8}$ in. long over body ends and 9 ft. wide over body panels, with the body side profile the same as the standard British Railways carriages. The driving cab end on each vehicle is to an entirely new profile for electric stock, the aim being to give the motorman better vision and to improve the exterior appearance of the train.

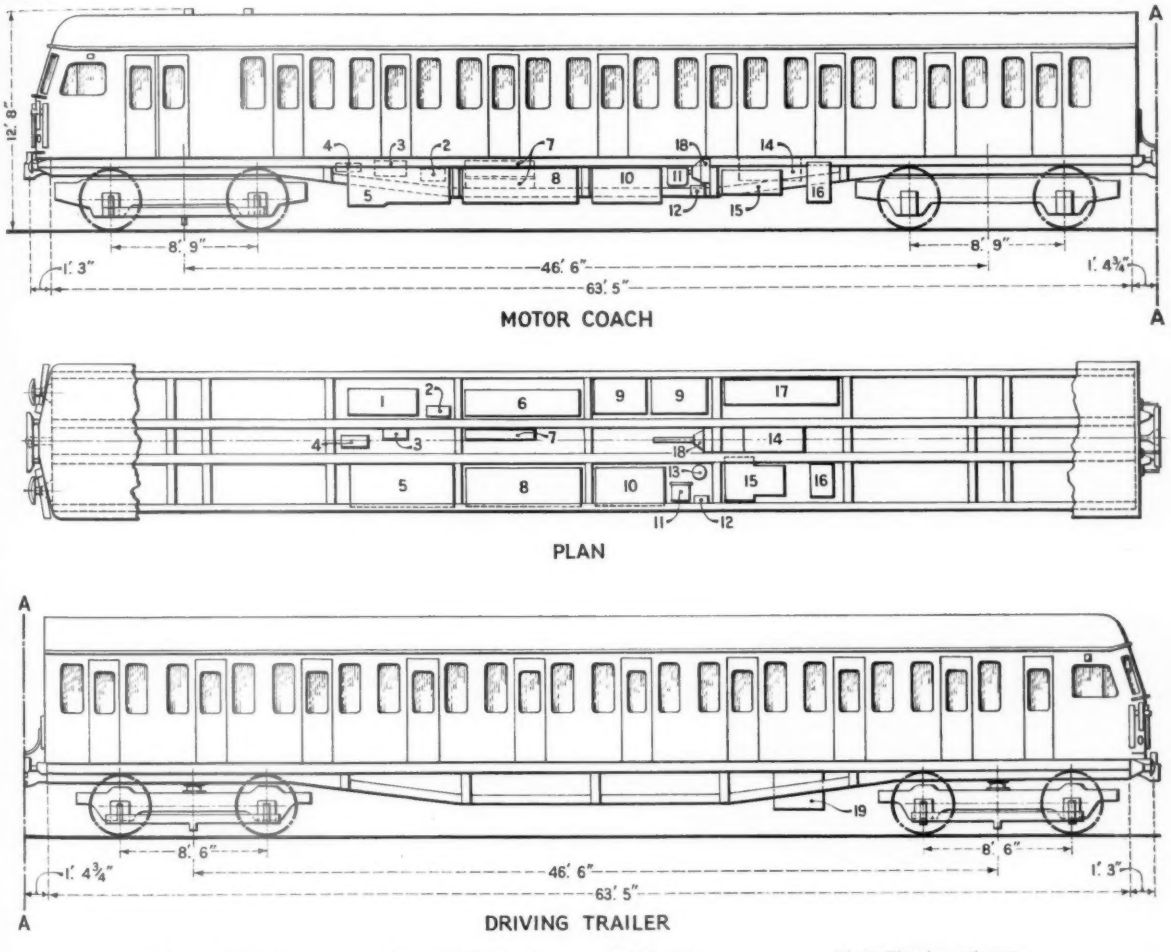
The vehicle underframes are of welded mild steel construction to standard British Railways design, with a length of 63 ft. 5 in. over headstocks. The outer ends of each two-car set are fitted with telescopic side buffers and drophead automatic couplers, the intermediate ends have fixed automatic couplers without side buffers. Double bolster bogies with knife edge suspension are used, the motor bogies being built up from steel plates and rolled steel section, and the trailer bogies with main members of pressed steel. The principal members of both bogies are joined together by riveting.

The bogies are fitted with fully equalised and compensated brake gear for the self lapping electro-pneumatic brakes installed on each vehicle. Roller bearing axleboxes, grease lubricated, are used throughout.

Welded Coach Construction

The coach bodies are of welded steel construction insulated against sound and changes in external temperature by insulating material which is packed in the cavities between the outer steel panels and the interior finishing of the bodysides, ends, and roof. The double floor consists of a blockboard panel covered with $\frac{1}{4}$ in. linoleum for the upper surface, with corrugated aluminium panels on the underframe, the space between the two being filled with insulating material.

The bodyside and end windows are



1 Motor generator set
2 Control strainers
3 Control reservoir
4 Main connection box
5 Line breaker case
6 Battery in box No. 1
7 Auxiliary reservoir
8 Reverser case
9 Main resistance case
10 Contactor case
11 E.P. unit
12 Anti-freeze unit
13 Strainer
14 Main reservoir
15 Compressor
16 Auxiliary h.t. resistance
17 Battery in box No. 2
18 Brake cylinder
19 Auxiliary h.t. case

Diagram of two-car set, showing principal dimensions and layout of equipment

rubber glazed in light alloy frames, the driver's windows and drop lights being of toughened glass. All bodyside doors are of light alloy construction.

The master controller, brake controller, and instruments for the motorman's use have been arranged in the form of a desk across the body and below the motorman's windows, giving a neat appearance to the driving compartment. The motorman's seat is adjustable in height and position and a balanced drop light is fitted on the side panel. The interior finish of the driving cabs comprises plastic faced wall panels and a moulded polyester ceiling.

The interior finish for the passenger compartments is a blend of timber and plastic faced wall panelling with light alloy luggage racks; the latter is fitted on the cross partitions where convenient, and on the bodysides above the windows between doorways in the case of the open vehicles. Double spring type passenger seating is provided with a variety of moquette upholstery. The ceiling electric light fittings and shoulder lights in the case of the first class compartments, have been chosen to tone with the general finish and appearance of the cars.

Two-car electric train for Manchester-Bury Line

Current Collection

Spring loaded collector shoes are fitted on each side of the leading bogie of the motor coach and on both bogies of the driving trailer of each unit, giving a shoe span of 112 ft., all shoes of a unit being interconnected by a bus line. There is no 1,200V. connection between coupled units but bus line receptacles have been installed to facilitate movements at the maintenance depot in conjunction with an overhead trolley.

The power bus line running through each unit supplies the traction motor and h.t. auxiliary circuits, the whole of the h.t. system being insulated for 1,500V. with standard 1,500V. equipment modified where necessary for 1,200V. operation. All h.t. equipment will be underframe mounted.

The electrical equipments, supplied by the English Electric Co. Ltd., are constructed to operate on the 1,200V. d.c. third-rail system already in use on the Manchester–Bury Line. This system, the only one of its kind in the country, is to be retained on this particular line because conversion to the overhead system of electrification, involving considerable engineering work, would defer for some years the provision of new rolling stock for the Manchester–Bury services.

Traction Motors

There are four traction motors to a unit, each with a continuous weak field rating of 119 h.p. at 550V., 180A. and 1,168 r.p.m., with a gear ratio of 63/17 and 40 in. dia. road wheels. The motors are axle hung with sleeve type suspension bearings and will be self-ventilated with air inlet screens.

The two motors of each bogie are permanently connected in series with series-parallel Simplex control of the two pairs, bridge transition and field weakening affording these running positions, and an inching notch.

The control equipment comprises electro-pneumatic contactors, reversers, line and field switches, with the circuit arranged to ensure that only the line switches break traction current. Isolators are fitted, with manual operation external to the equipment, for cutting out either pair of motors and isolating the complete motor circuit.

A current limit relay gives automatic notching with facility for reduced acceleration. Overload, no-volt and train pipe air pressure protection are provided. H.R.C. fuses are fitted throughout, three ratings covering all l.t. and h.t. circuits. H.T., l.t. and electro-pneumatic brake supply indicator lamps are fitted in each motorman's cab.

Heating and Lighting Supplies

Supplies for passenger and crew heating are taken from the power bus line through h.t. contactors on each coach, the heater negatives on the driving trailer being insulated, and returned to the earthed negative bus-bar on the motor coach through a semi-permanent coupler. Tubular heaters of 750W. 750V. rating connected in series pair provide 24·5kW. of passenger heat and 5kW. of crew heat per unit at 1,200V. Train control of passenger heat is available from each guard's van, with a thermostat situated in the leading saloon of the motor coach controlling each of the 24·5kW. units.

L.T. supplies are available at 110V. d.c. from a 4·5kW. totally enclosed motor generator and 80 Ah. emergency Nife battery. The motor generator output voltage and current are controlled by a carbon pile regulator of the decompounding type.

Passenger lighting at 110V. d.c. is on two circuits per unit, the main circuit of

Interior of second class saloon, left, and first class compartment, right

Installation of interior panels, showing material for sound and heat insulation

1,600W. being supplied from motor generator side of a reverse current contactor and the remaining 480W. from the battery side, to afford a minimum of illumination in the event of a supply failure. Incandescent lighting is used throughout. Facilities are provided to connect the passenger lighting circuits to a 110V. shore supply for coach cleaning.

The auxiliary lighting circuits are fed from the battery and include twin tail lamps, route indicators, and two-way guard's lighting. One lamp from each of the passenger lighting circuits completes the guard's van lighting. Compressed air for the brakes and control is provided by a 25 cu. ft. per min. compressor, the motor of which is rated for 1,500V. operation with field tapping for 1,200V.

A system of telephone communication between driver and guard is provided in addition to bell communication, and provision is made for automatic train control to be installed at a later date.

For normal operations trains will be made up of two two-car sets, but for off peak periods the trains will be reduced to two-car sets.

The principal sub-contractors are as follow:

Electrical Equipment	English Electric Co. Ltd.
Axleboxes	British Timken Limited
Wheels and axles	British Railways, Derby
Bolster springs	Turton Bros. & Mathews Ltd.
Buffing and drawgear	Laycock Engineering Limited A. G. Wild & Co. Ltd. The English Steel Casting Corporation Limited
Heating and sound insulation	Cape Asbestos Co. Ltd.
Shock absorbers	Dunlop Rubber Co. Ltd. Andre Rubber Co. Ltd. British Tyre & Rubber Co. Ltd.
Windows	Beckett, Laycock & Watkinson Limited
Window wipers	Trico Folberth Limited
Bodyside passenger doors	Dean & Son (Yorkshire) Ltd.
Interior panels	Bakelite Limited W. A. Bonnell Limited Thomas Thompson Sons & Co. Ltd.
Cab instruments	Westinghouse Brake & Signal Co. Ltd. British Thomson Houston Co. Ltd.
Route indicators	E. W. Mathews Limited

Motor Luggage Vans for the Southern Region

(*Concluded from page* 332)

it is required to provide traction power it is connected to the control gear and motors in place of the line supply by a contactor which is interlocked with the line switches to prevent both being closed at the same time. The van is, therefore, controlled in exactly the same way when powered by the battery as when powered from the line, but the performance is reduced. Selection of battery power is controlled by a push button in the cab, and reversion to line power may be obtained by operating a similar push button or by opening the master switch. So long as the battery supply is selected, an indicator in each cab is illuminated and the collector shoes are pneumatically held clear of the conductor rail to allow exit from those unelectrified sidings which have no provision, such as a side ramp, for leading the shoes back on to the conductor rail. A "state of charge meter" is also fitted to give the driver adequate warning of battery exhaustion.

The compressor and exhauster are supplied from the traction battery, or from its charging supply when on the line, but the control gear and lighting are supplied from a 70-V. source consisting of a generator driven by the same motor as the 200-V. generator and a battery of 42-Ah. capacity. Both batteries are of the lead-acid type, although all the control batteries on the multiple unit sets are of the alkaline type.

The stock was built at Eastleigh Works, British Railways, Southern Region, under the general direction of Mr. W. J. A. Sykes, Chief Mechanical & Electrical Engineer; Mr. H. S. Smyth, Electrical Engineer; and Mr. F. J. Pepper, Carriage & Wagon Engineer. The electric traction equipment was supplied by the English Electric Co. Ltd., the electro-pneumatic brakes by Westinghouse Brake & Signal Co. Ltd., and the batteries by D. P. Battery Co. Ltd.

FOUR-TRACKING WORK ON THE METROPOLITAN LINE.—Work started on October 12, on the civil engineering works for the four-tracking of the 6¼ miles of the London Transport Metropolitan Line between Harrow North Junction and Watford South Junction. This is part of the £9,000,000 improvement scheme for the Metropolitan Line, which includes electrification from Rickmansworth to Amersham and Chesham and the provision of new electric rolling stock for all Amersham, Chesham, and Watford trains.

When the four-tracking is complete, the provision of separate tracks for fast and local trains will make improved running possible.

The work started includes three key works :

(*a*) Rebuilding bridge No. MR.60, a skew bridge at a sharp angle, over the Rickmansworth Road near Northwood to take four tracks. This will include the placing of three 300-ton girders, enabling the road beneath to be widened to 60 ft.

(*b*) Reconstructing Northwood Station buildings on a concrete raft above the new tracks which are being built on the east side, as there is no room on the west side of this station. The existing station buildings on the southbound platform will be demolished and the platform will be rebuilt to serve northbound trains. A completely new platform will be built to serve southbound trains when the track alterations have been carried out.

(*c*) Rebuilding Moor Park Station in two stages, to provide two island platforms, serving fast and slow tracks, connected by a passenger subway.

Apart from laying 6¼ miles of new double track, 17 bridges are being rebuilt or widened to take the extra pair of tracks. Electrification work on the Metropolitan Line is already in hand and the complete works, including the four-tracking will be completed in 1962.

The main contractor for the four-tracking is W. & C. French Limited, of Buckhurst Hill, Essex, and the work will be to the requirements of Mr. C. E. Dunton, Chief Civil Engineer, London Transport.

BRITISH PLASTICS FEDERATION AT DUSSELDORF.—The following firms will exhibit on joint stand which the British Plastics the Federation, in collaboration with the Board of Trade, is to have at the International Plastics Fair, Dusseldorf, on October 17—25: Bakelite Limited, Brainos & Company, Bristol Aircraft Limited, British Geon Limited, British Resin Products Limited, Durapipe & Fittings Limited, Ekco Plastics Limited, Novadel Limited, Portland Plastics Limited, and Bernard Wardle (Everflex) Limited.

Electric Traction Section

Electrification on Two Systems in Japan

Further conversion at a.c. and d.c. New electrified standard-gauge main line. Tests at 100 m.p.h. on 3-ft. 6-in. gauge

(*By a correspondent*)

THE success of the experimental electrification at 20 kV. a.c. on the Senzan Line of the Japanese National Railways in 1955 resulted in the decision to embark on full-scale a.c. electrification of the 3-ft. 6-in. gauge system. A 27-mile section of the Hokoriku Main Line was converted and electric traction inaugurated in October, 1957. Nineteen Type "WD· 70" ignitron locomotives were built to work on this section.

Conversion of three further sections now in progress is due for completion in about two years. The sections are:

Line	Section	Miles	Cycles
Tohoku Main ...	Kuroiso-Sendai ...	118	50
Kagoshima ...	Mojiko-Kurume	72	60
Joban	Toride-Taira ...	107	50

Conversion of 70 miles of the Tohoku ("Tokyo North East Trunk") Line is due to be completed in March, 1960. Thirty-two mercury arc rectifier locomotives of a new type, "ED 71," were ordered from manufacturers for operation on this line. Three are being used on the partially-completed section for training footplate and maintenance staff. The 1-hr. rating is 2,040 kW. They are equipped with excitron mercury rectifiers.

Dual System Locomotives

On the Joban Line along the east coast of Honshu electrification of a 48-mile section is to be completed by April, 1961. The 25-mile section of the Joban Line north-eastwards from Tokyo was converted at d.c. some 20 years ago. Experimental dual-system locomotives and motor coaches have been built for through working.

The Kagoshima Main Line, in the north part of the island of Kyushu, is to be converted in 1961, but electrification of the section connecting this section with the Tokaido and Sanyo main lines in Honshu, which are being converted at 1,500 V d.c., is to be on the d.c. system.

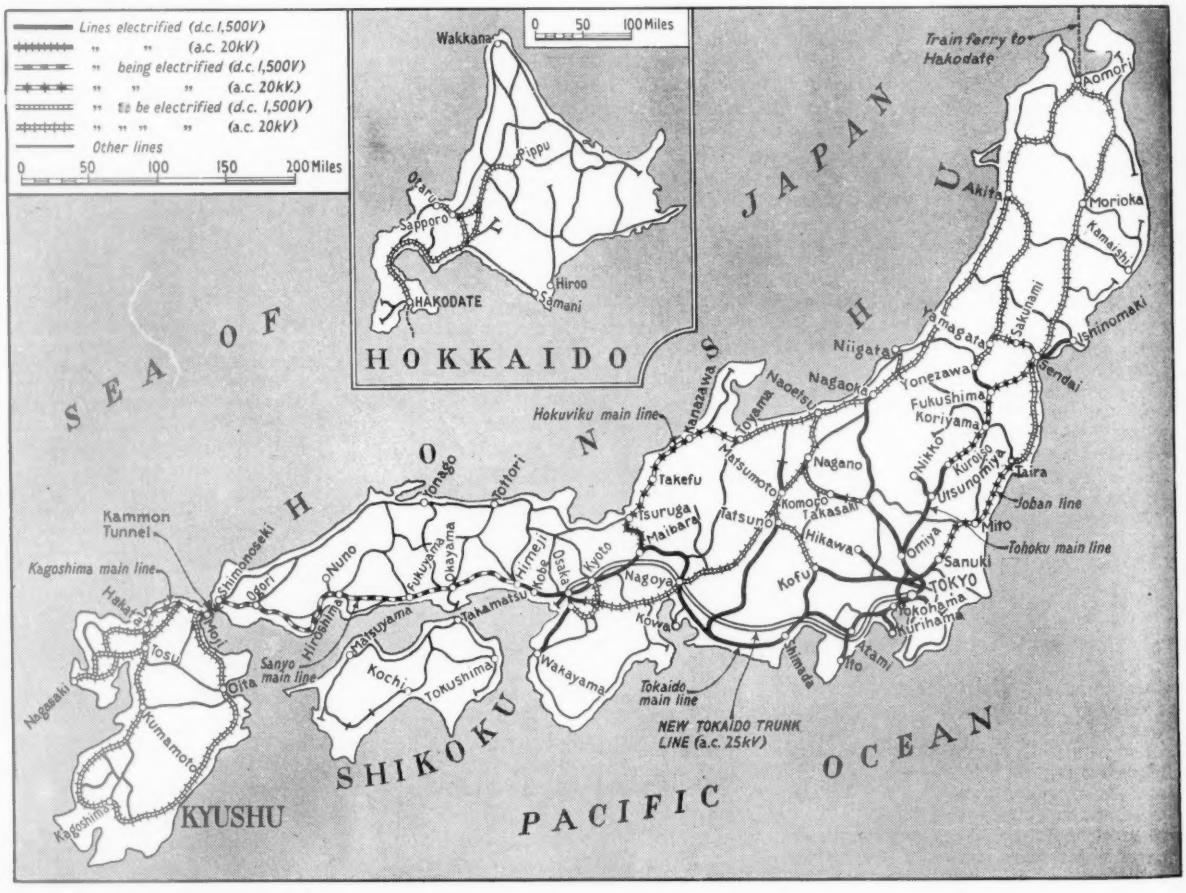
It is intended to use dual-system locomotives on this line, which runs through the Kammon Tunnel under the strait between Honshu and Kyushu. These locomotives are designed primarily for working on d.c. lines. They are equipped with silicon rectifiers to facilitate working in the yards at Moji, in Kyushu, the junction between the a.c. and d.c. systems. The prototype is to be completed this year.

Several types of a.c. motor coach have been built or are under construction. Vehicles equipped with induction motors and torque converter or special gear reduction have been constructed for services on local lines.

Standard-Gauge Trunk Line

The first sod of the roadbed of the 4-ft. 8½-in. gauge trunk line between Tokyo and Osaka was cut on April 10, 1959, by Mr. S. Sogo, President of the J.N.R., at the east portal of the new Tanna Tunnel, which is roughly parallel to the Tunna Tunnel on the existing Tokaido 3-ft. 6-in. gauge main line.

Congestion of the Tokaido Line (Tokyo-Kobe) was the main reason for



D.c. and a.c. electrification completed, in progress, and planned in Japan

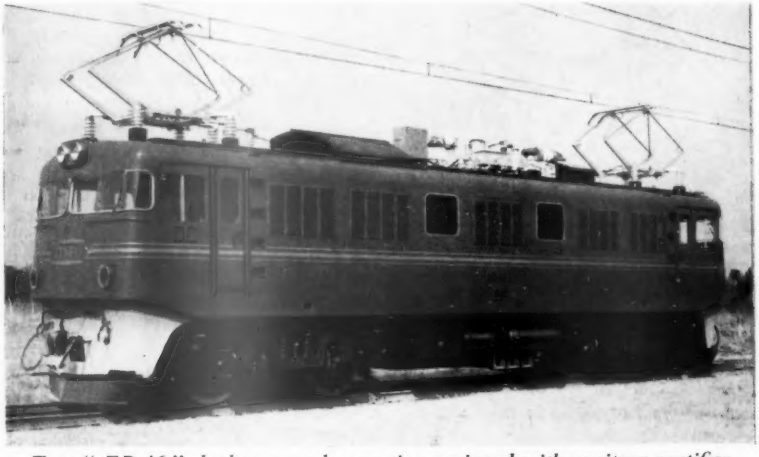
building the new railway. The existing Tokaido Line is the most important in Japan, linking more than 40 cities, including industrial zones such as the Tokyo-Yokohama, Nagoya, and Osaka-Kobe areas. The length of the line is 367 miles, or 2·9 per cent of the total route-mileage of the J.N.R. More than 36,000,000 people, around 40 per cent of the total population of the country, live along the line. The manufacturing output of the industrial zones constitutes more than 60 per cent of national production.

Heavy Traffic on Tokaido Line

Traffic is heavy. It accounts for about 24 per cent of the total passenger and about 23 per cent of the total goods tonnage. From 60 to 80 passenger and from 50 to 60 goods trains are run each way daily, and traffic is increasing. Measures to augment capacity include electrification of the entire line, completed in 1956. With 120 trains each way daily the double-track line with some stretches of quadruple track, is now near saturation. In planning the new line, consideration was given to the effects of building a trunk road and of the development of sea and air transport. In general it is felt that none of these will attract a large volume of traffic away from the railway. The fact that much of the freight moved by rail is primary products such as coal, timber, and gravel, which will not bear high rates, is in favour of rail transport. If the present rating structure remains as at present, which is thought probable, coastal shipping will not affect railway freight traffic adversely. Development of air transport is unlikely to cause a reduction in railway passenger traffic, because of the necessarily high air fares and restricted public spending power.

Apart from its greater capacity, the adoption of 4-ft. 8½-in. gauge will result in economies. The cost per mile of building the wider gauge is higher, but there will be no necessity for connections with existing lines. It will be possible to electrify at a.c., with consequent savings in installation costs, from the outset, because there will be no physical connections with the 1,500V.-d.c. electrification on the 3-ft. 6-in. gauge.

Six-car train at 100 m.p.h. on test run, July 31, 1959. Note 3-ft. 6-in. gauge track with long-welded 100-lb. rail

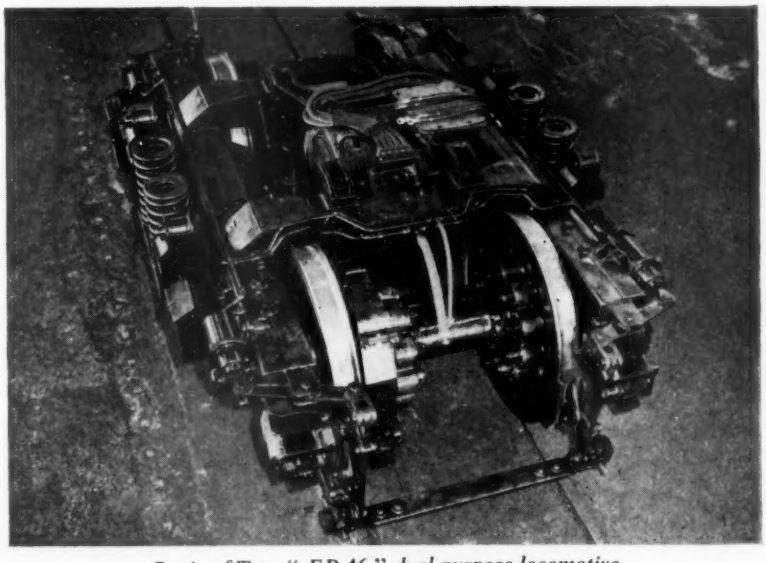


Type "ED 46" dual-purpose locomotive equipped with excitron rectifier

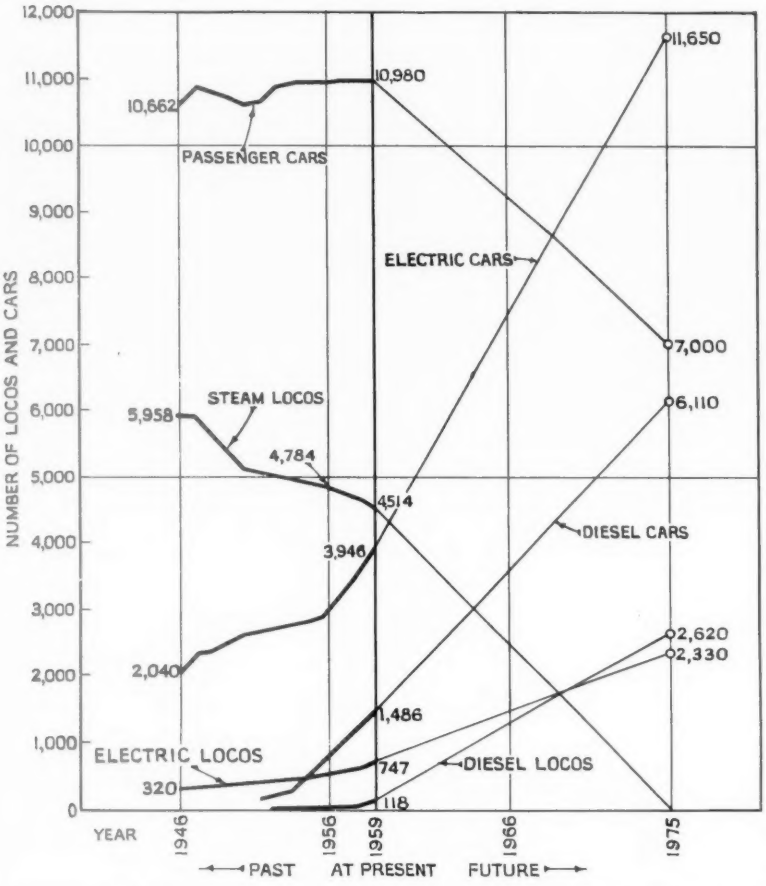
On the new line passenger trains will be able to cover the distance between Tokyo and Osaka in 3 hr. and express goods trains in 5½ hr. The fastest passenger and freight trains on the present Tokaido Line require 6 hr. 40 min. and 11 hr. 30 min. respectively for the 344 miles between Tokyo and Osaka. To ensure safety at operation there will be no level crossings. Passenger trains will be multiple-unit. Goods trains will be hauled by electric locomotives.

The minimum radius of curves is to be 124 ch. and the maximum gradient 1 in 100. Cooper's standard loading is to be adopted. There will be as few intermediate stations as possible.

The total cost involved will be around £170 million, including rolling stock cost.



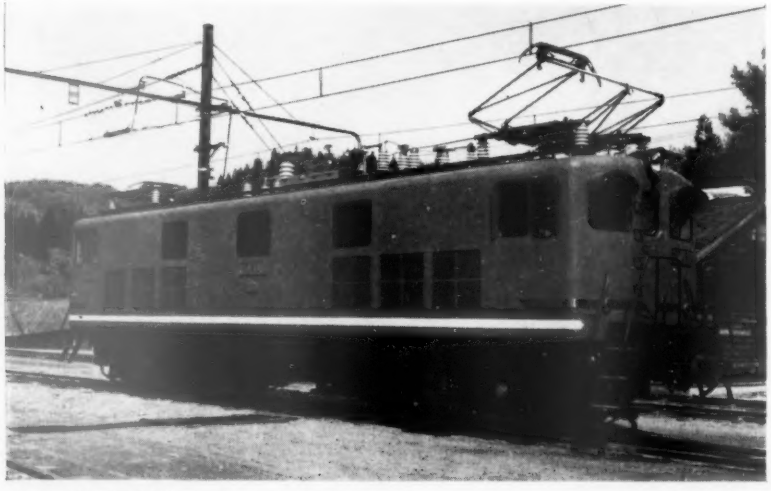
Bogie of Type "ED 46" dual-purpose locomotive



Japanese National Railways ownership of motive power and rolling stock, showing proposals for 1975 *of advisory committee on motive power modernisation*

It is hoped to complete the construction work of the new line by 1961 or 1962 when the present Tokaido Line will be unable to move more traffic.

Test runs at high speed were conducted on July 27-31, 1959, on the Tokaido Line with the multiple-unit "Kodama" express. The maximum speed scheduled was 100 m.p.h., but, on July 31, 102 m.p.h. was attained, a record on the 3-ft. 6-in. gauge in Japan, and, it is believed, in any country. The previous Japanese record was 90 m.p.h., in September, 1957, also on the Tokaido Line, with a streamline multiple-unit train of the Odawara Express Railway, a privately-owned undertaking.



Type "ED 45 *" a.c. locomotive with ignitron mercury rectifier, built in* 1955

The section over which tests were made last July was six miles long, on the up track half-way between Tokyo and Osaka. The stretch is almost level, with a fall of about 1 in 300. Track consists of 100-lb. welded rail laid on base-plates, rubber pads, and pre-stressed concrete sleepers.

The trains working the "Kodama" service between Tokyo and Osaka are eight-car sets, described in our issue of December 19, 1958. The schedule for the 344 miles is 6 hr. 40 min. The maximum speed permitted is 68 m.p.h.

For the tests two second class trailers were taken out, making a six-car train of two three-car units. Each unit consisted of third class driving trailer and two third class motor coaches. The sets were built for a maximum speed of 100 m.p.h. The object of the tests was to ascertain the practicability of this speed after adjustments to track and catenaries. They afforded valuable data as regards accelerations planned for electrically worked trains on the 3-ft. 6-in. gauge and new 4-ft. 8½-in. gauge lines.

Riding at High Speed

On July 28 a preliminary run was made during which 75 m.p.h. was achieved. The experiment had to be discontinued because of considerable lateral vibration in the third and fourth motor coaches. Irregularity in the contour of wheel treads was found to be the cause. After re-turning of all wheels in the set riding improved and it was possible to proceed with the test runs as planned.

The tests also facilitated calculation of side-thrust against rails, and of the vibration of various components. Valuable information was provided on the behaviour of pantographs and catenaries during fast running.

Motive Power Policy

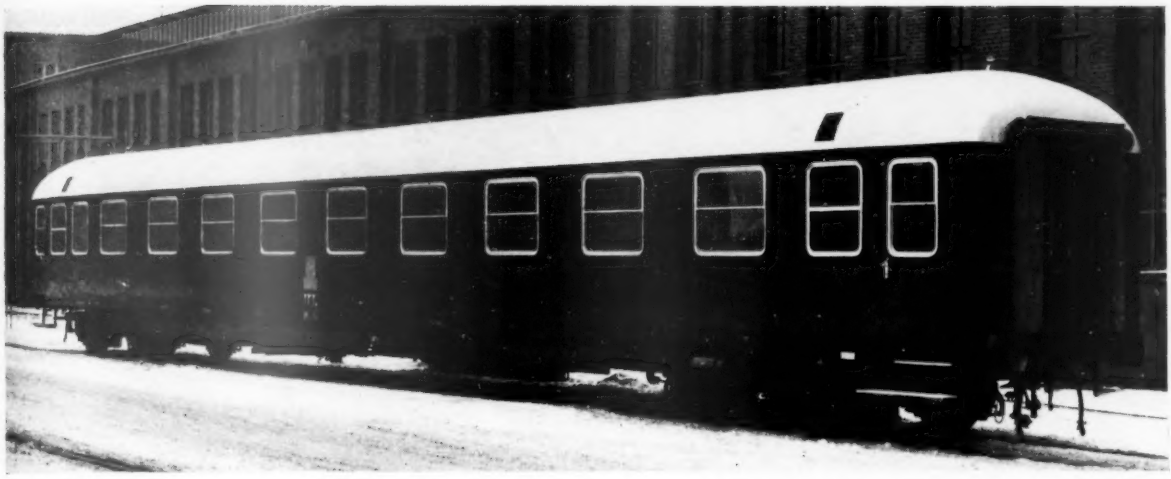
In 1958 the management of the J.N.R. set up an advisory committee on modernisation of motive power. The members included senior officers of the J.N.R., and men not holding appointments on the railway. The committee submitted its findings in May, 1959.

Steam traction, it was recommended, should be abolished and the motive power of the J.N.R. modernised during the period 1960-75. During these 15 years 3,200 route-miles would be electrified. The remainder of the system, where not electrified, would be turned over to diesel traction. Lines over which traffic continued to be unsatisfactory and offered no prospect of improvement, even after adoption of diesel traction, should be considered for closure.

The total investment is estimated at £486,000,000. If the recommendations are adopted expenditure on motive power will be reduced and working costs are expected to be cut by 30 per cent.

Air-Conditioned Coaches for Persia

Seating adaptable as first or second class : special attention paid to heat insulation



Air-conditioned upper class coach, showing tubular sides and lintel of gangway

THE Persian State Railways have obtained a considerable amount of passenger stock in the last few years, including 20 first class and 25 second class coaches, delivered at the end of 1958 by Deutsche Waggon-und Maschinenfabriken G.m.b.H., of Borsigwalde, Berlin. These vehicles are exactly alike in design. The accommodation can be changed to serve as first or second class, with four or six seats per compartment respectively; the class designation signs are removable.

Principal dimensions are as follow:—

Weight	43½ *tonnes*	
	ft.	in.
Gauge	4	8½
Length of body	85	7½
Bogie centres	62	4
Bogie wheelbase	8	2⅜
Number of first class seats	20	
Number of second class seats	24	

In the accompanying diagram the coach is shown as divided between the first and second classes.

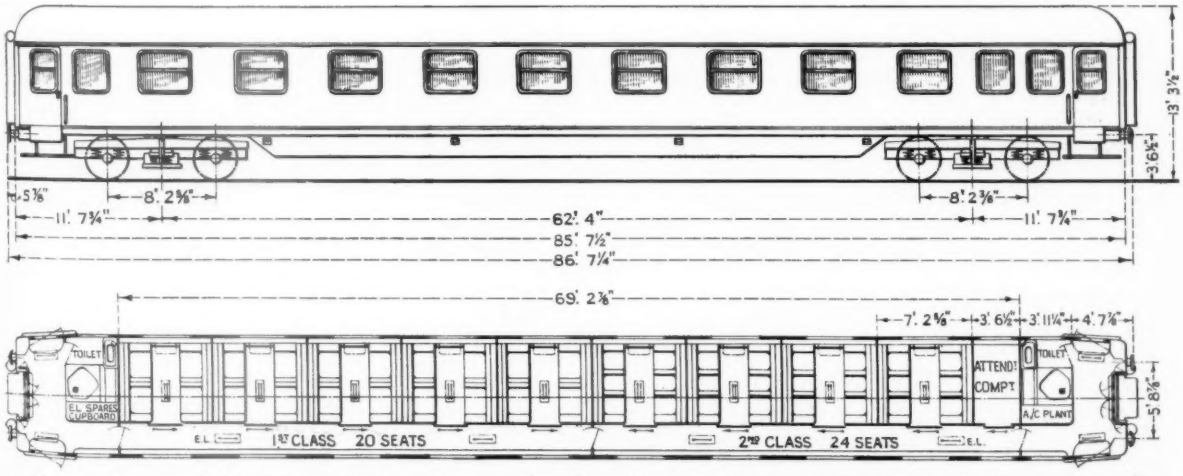
The wide gangways, of the form used by the German Federal Railway, are not protected by ordinary collapsible surrounds but by heavy tubular ribbing on the ends of the vehicle which keeps a gangway effectively closed off, even on sharp curves. To conform with international regulations and permit of through running over the Turkish State Railways, spring side buffers are provided with screw couplings of 85-*tonne* breaking load. The brake is the Knorr " Hikpbr " single chamber automatic air brake with 14 in. cylinders.

Heat Insulation

The body is completely welded and specially heat insulated; the inside is cork sprayed to a depth of ⅛ to $\frac{3}{64}$ in. The space between the steel plating and the wooden flooring filled with Sillan mineral wool, used also for the sides and roof.

The seats have springs and rubber overlay, with a soft brown upholstery. The ordinary baggage racks used by day are folded back to avoid disturbing passengers in the upper berths; there is ample baggage space over the door. Each berth has a 10-W. reading lamp and a handwheel controlling the door lock. The double outer windows can be lowered half-way and secured by a key, and a third glass inside serves to protect the blind working next to these windows and as a heat retainer in connection with the air-conditioning.

The inner wall covering is in fine-grain mahogany veneer on fireproofed plywood. The inner roofing of white enamelled hard fibre boarding, with alu-



Upper class coach for Persian State Railways. Plan shows how compartments seat four or six passengers. All compartments are adaptable as first or second class

XUM

Compartment arranged for day travel, with folding baggage racks lowered

minium strip beading and concealed screw heads. All such metal work is finished in German silver colour, including any on the corridor sides.

Each compartment normally is lighted by three 20-W. fluorescent tubes with a 5-W. tube for reduced night lighting.

In the toilets are a cupboard, with holders for clean and used towels, and a plug socket for electric razors. Each lavatory has a 55- and 110-gal. water tank. The 110-gal. tanks have steam coils providing hot water for washing.

The Minden-Deutz type bogies, as used by the German Federal Railway, each weighs 10½ *tonnes* without dynamo attachment and have wheel sets to U.I.C. specifications running in roller bearings supplied by Kugelfischer of Schweinfurt.

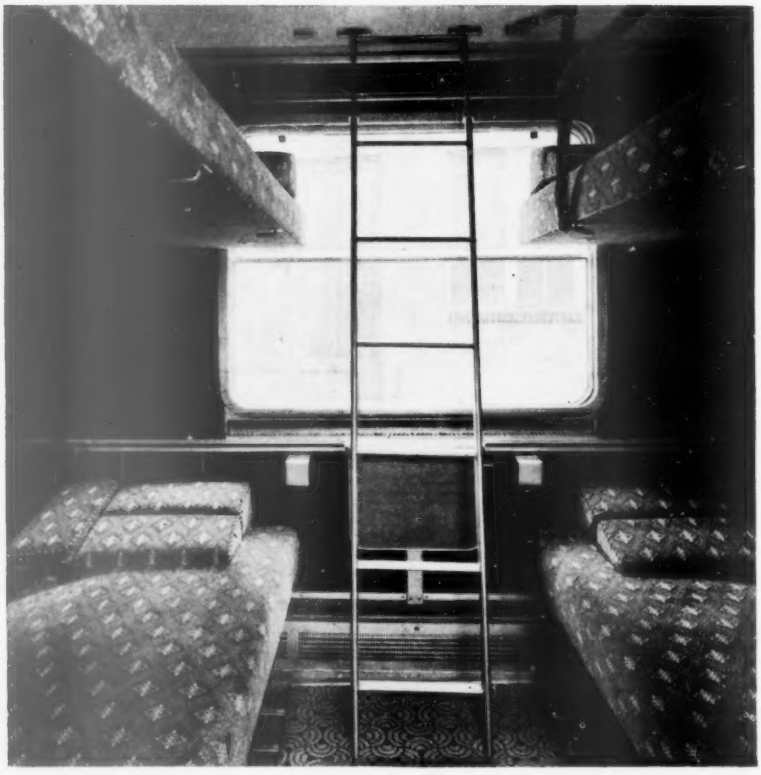
Air-Conditioning

The air-conditioning equipment is housed under the body and in the lower part of the sides. The "jet-air" system needs very little piping. The units are below the windows and appear to be no different from simple ordinary heaters. A grid at window-ledge level delivers the conditioned air upwards into the compartment. This system uses air and water as the conveying elements and all compartments are conditioned, whatever the season, but the corridors and spaces connected therewith are steam heated in winter.

The window-ledge units are filled in winter with warm water and in summer with cold; steam from the heating system is led to an element which warms the water passing to these units, while warm air is sent by a blower through side pipes, automatically regulated to correct temperature and humidity. In summer the window units receive cold water from the cooling plant and the air coming up past them becomes cooled also and conditions the compartment accordingly.

Passengers can regulate the temperature by valve handles and there is no draught, as the conditioned air comes solely from the window units. The same pipes, both for air and water, are thus used at all seasons. This equipment was provided by Luwa G.m.b.H.

View of lavatory from vestibule



Berths arranged for the night, showing use of cushions

Each coach has two 25-kW. three-phase generators, carried diagonally opposite each other on one of the bogies, to simplify the wiring arrangements, with cardan shaft drive from the axles. Silica rectifiers convert the current into d.c. for lighting and so on and battery charging. A plug-connector enables power to be taken from a local supply should the vehicle be at a station and require to be completely air-conditioned. The battery has a 88 nickel-cadmium type AC 8 HW cells, 300 Ah. capacity at 5 hr. discharge. This is a so-called "small tube cell" battery, manufactured by D.E.A.C. of Frankfurt. The mean discharge voltage is 110.

There are four separate lighting circuits feeding the fluorescent tubes and other items, and the four regulation U.I.C. tail lamps. Power and lighting apparatus for the whole car was supplied by Fried. Krupp Maschinenfabrik.

RAILWAY NEWS SECTION

PERSONAL

Mr. A. E. Griffiths has been elected Assistant General Secretary of the Associated Society of Locomotive Engineers & Firemen. He will take up the appointment in October, 1960, in succession to Mr. W. J. Evans, who will then take over the General Secretaryship on the retirement of Mr. A. Hallworth. Mr. Hallworth has been General Secretary of A.S.L.E.F. since January, 1956.

Mr. Harold Watkinson, former Minister of Transport & Civil Aviation, who becomes Minister of Defence in the newly-formed Cabinet, has been Conservative Member of Parliament for Woking since February, 1950. Mr. Watkinson was Parliamentary Secretary to the Ministry of Labour & National Service from May, 1952, until his appointment as Minister of Transport & Civil Aviation in December, 1955. He was formerly Parliamentary Private Secretary to the Minister of Transport & Civil Aviation. over 11,000, which increased by a thousand at the next General Election. In the recent election he further increased his majority, to over 17,000. As Parliamentary Secretary to the Ministry of Labour, Mr. Watkinson made several tours to study at first-hand local industrial problems and the work of the local offices of the Ministry. In 1958, at the invitation of the Port of New York Authority, he visited New York. He also visited Ottawa and met Mr. George Hess, Canadian Minister of Transport.

Mr. Harold Watkinson
Minister of Transport & Civil Aviation, 1955-59

Mr. Ernest Marples
Appointed Minister of Transport

The new Cabinet is made up as follows:—
Prime Minister, Mr. Harold Macmillan.
Home Secretary, Mr. R. A. Butler.
Lord Chancellor, Lord Kilmuir.
Foreign Secretary, Mr. Selwyn Lloyd.
Chancellor of the Exchequer, Mr. Derick Heathcoat Amory.
Commonwealth Relations Secretary & Lord President of the Council, Lord Home.
Scottish Secretary, Mr. John Maclay.
Lord Privy Seal, Lord Hailsham.
Minister of Aviation, Mr. Duncan Sandys.
Colonial Secretary, Mr. Iain Macleod.
Minister of Defence, Mr. Harold Watkinson.
Minister of Housing & Local Government & Welsh Affairs, Mr. Henry Brooke.
Minister of Education, Sir David Eccles.
Paymaster-General, Lord Mills.
President of the Board of Trade, Mr. Reginald Maudling.
Minister of Agriculture, Mr. John Hare.
Minister of Labour, Mr. Edward Heath.
Chancellor of the Duchy of Lancaster, Dr. Charles Hill.
Minister of Transport, Mr. Ernest Marples.

Mr. Watkinson was born in 1910, at Walton-on-Thames, and educated at Queen's College, Taunton, and King's College, London. He is an engineer by profession, and before taking office was Director of a machine tool company; he also has been associated with this group of technical and engineering journals. His industrial experience includes the timber and woodworking industry, building, shipbuilding, and general engineering. He has travelled widely, and has visited most countries of Europe; he knows the Scandinavian countries particularly well. During the war he served in the Royal Naval Volunteer Reserve, first in Channel Convoys in 1940 and later in the Atlantic. In 1945, as Lieutenant-Commander, he was in charge of training at the main naval A.A. gunnery school. On demobilisation he turned to politics. He helped to organise the Dorking new division in 1948, becoming its first Chairman. In 1949 another new constituency, Woking, adopted him as prospective Conservative candidate and, in 1950, he won the seat in a three-cornered contest at the General Election with a majority of

Mr. Ernest Marples, formerly Postmaster-General, who becomes Minister of Transport in the newly-formed Cabinet, is the Conservative Member of Parliament for Wallasey. Mr. Marples was born in 1907 and educated at Victoria Park Council School, from where he won a scholarship to Stretford Grammar School. He entered Parliament when he won his present seat for the Conservative Party in the General Election of 1945. In 1950, 1951, and again in the recent election he increased his majority. In 1928 Mr. Marples qualified as an Incorporated Accountant, and after a time with a firm of City accountants, set up in business on his own. He is the founder of Marples, Ridgway & Partners Limited, Civil Engineering Contractors. Before the 1939-45 war he served with the London Scottish in the Territorial Army. He became a War-Substantive Regimental Sergeant-Major. Subsequently commissioned, he left the Army with the honorary rank of Captain. In 1951 Mr. Marples became Parliamentary Secretary to the Ministry of Housing & Local Government. In that capacity he took a prominent

part in providing the 300,000 houses a year promised by his Party. In October, 1954, he was appointed Parliamentary Secretary to the Ministry of Pensions & National Insurance. He resigned this appointment in December, 1955, and in January, 1957, was appointed Postmaster-General. Because of the creation of a Minister of Aviation, the former title of Minister of Transport & Civil Aviation has been abbreviated.

Mr. L. W. Ibbotson, Assistant to the Operating Superintendent, Western Region, British Railways, who, as recorded in our September 4 issue, has been appointed Assistant General Manager, Modernisation, joined the London & North Eastern Railway as a Traffic Apprentice in 1927. After six years' training in the Southern, Scottish and North Eastern Areas, was appointed Assistant Yardmaster, West Hartlepool. He then occupied various positions in the District Offices at Darlington, and Newcastle. He later became Trains Assistant to the Superintendent and Locomotive Running Superintendent at York. In 1945, after a short period as Acting District Superintendent, York, he was appointed District Superintendent, Darlington. In 1950, Mr. Ibbotson was moved to the Western Region as Assistant to the Operating Superintendent, the position he now relinquishes.

Mr. T. S. Roberts, a nominee of the British Transport Commission, has been appointed a Member of the Transport Users' Consultative Committee for the Yorkshire Area until October 31, 1960. He succeeds Mr. H. L. Hopkins, who has retired from the service of the Commission. Mr. Roberts is Chief Docks Manager, Hull, B.T.C. Docks.

Mr. P. B. Browne, a member of the Road Haulage Association, has been elected Conservative Member of Parliament for Torrington. The seat previously was held by Mr. M. R. Bonham-Carter, Liberal.

Mr. T. W. H. Gailey, who recently has been appointed an Executive Director of the Tilling Group, from January 1, 1960, has also been appointed a Director of the following Tilling Group Companies with effect from the same date: Hants & Dorset Motor Services Limited (Chairman), Southern Vectis Omnibus Co. Ltd. (Chairman), Eastern National Omnibus Co. Ltd., Brighton, Hove & District Omnibus Co. Ltd., United Counties Omnibus Co. Ltd., Tillings Transport (B.T.C.) Limited, and Thames Valley Traction Co. Ltd.

Mr. K. W. C. Grand, a nominee of the British Transport Commission, has been appointed a Member of the Central Transport Consultative Committee for Great Britain until December 31, 1960, in place of Lord Rusholme, who, as recorded in our February 20 issue, has retired from the Commission. A biography of Lord Rusholme also appeared in that issue.

Mr. E. P. Purcell has joined the Board of George Cohen (Dublin) Limited.

The former Minister of Transport & Civil Aviation appointed the following to be members of the Transport Users' Consultative Committee for the East Midland Area until May 31, 1962: Mr. J. A. Shervington, to represent industry; Mr. E. S. Good, to represent shipping; and Mr. J. T. E. Robinson, to represent the B.T.C.

Mr. B. Griffiths, Director & General Manager of United Welsh Services, Limited, has been appointed General Manager of Crosville Motor Services Limited, from January 1, 1960. He has been General Manager of United Welsh Services Limited, since 1946, and Director of that company since 1950. He is a Member of the Institute of Transport and was Chairman of the South Wales & Monmouthshire Section of the Institute, 1958-59.

Mr. S. J. Judson, Assistant Regional Establishment & Staff Officer, North Eastern Region, who, as, recorded in our October 16 issue, has been appointed Regional Establishment & Staff Officer, joined the London & North Eastern Railway in 1924. After experience in goods and passenger work, he was selected as a Traffic Apprentice. He was trained in the Southern Area of the L.N.E.R., and afterwards held appointments in the Operating Department at London (Ferme Park) in 1933, and in the Commercial Department at Newcastle in 1934. In 1941 he was appointed Stationmaster & Locomotive Shedmaster at Whitby, in charge of the work of four departments, and later became Assistant to the Mineral Manager, Doncaster. He was appointed Head of the Works Section, Commercial Department, York, in 1944, and later was made Docks & Works Assistant to the Goods Manager & Passenger Manager, York. He became Staff Assistant to the Operating Superintendent & Motive Power Superintendent, York, in 1949, and three years later was appointed Assistant (Wages Staff) to the Regional Staff Officer. In 1957 Mr. Judson became Assistant Regional Establishment & Staff Officer, North Eastern Region.

Mr. L. W. Ibbotson
Appointed Assistant General Manager, Modernisation, Western Region

Mr. S. J. Judson
Appointed Regional Staff & Establishment Officer, North Eastern Region

Mr. F. Edwards

Assistant General Manager, Siemens & General Electric Railway Signal Co. Ltd., 1957-59

Mr. T. Matthewson-Dick

Appointed Mechanical & Electrical Engineer (Maintenance), N.E. Region

Mr. J. K. Firth

Appointed District Goods Manager, Birmingham, L.M. Region

Mr. F. Edwards, M.I.R.S.E., Assistant General Manager, Siemens & General Electric Railway Signal Co. Ltd., who, as recorded in our October 2 issue, has retired, was born in 1892, and was educated at a private school in Wiltshire, and the City of London College. He later attended the Northampton Polytechnic Institute, in London, and served a two-year apprenticeship with a company of electric light and power engineers. In April, 1910, he joined British Thomson-Houston Co. Ltd. as General Assistant, in the Electrical Laboratory, and in 1914 moved to W. R. Sykes Interlocking Co. Ltd., in the Test Department. In 1915 Mr. Edwards joined the Royal Engineers, as a dispatch rider, but was invalided out, in 1917, after an accident. He then returned to W. R. Sykes Interlocking Signal Co. Ltd. and worked in the Drawing Office and Estimating Department before joining the Railway Signal Department of General Electric Co. Ltd. in 1923. He was appointed Sales Manager, Siemens & General Electric Railway Co. Ltd. in February, 1926, when the company was formed. Mr. Edwards became Assistant General Manager in 1957.

Mr. T. Matthewson-Dick, A.M.I.Mech.E., A.M.I.E.E., M.I.Loco.E., Assoc. Inst. T., Assistant Motive Power Superintendent, York, North Eastern Region, who, as recorded in our August 21 issue, has been appointed Mechanical & Electrical Engineer (Maintenance), North Eastern Region, was educated at Rutherford College and Rutherford Technical College, Newcastle-on-Tyne. He joined the London & North Eastern Railway at Newcastle in the Electrical Engineer's Department in 1923, and later transferred to the Chief Mechanical Engineer's department, Gateshead Works. On completion of his apprenticeship and training in the Locomotive Running Department, he was appointed draughtsman at Stooperdale, Darlington, in 1929. He returned to the Locomotive Running Department, Gateshead, as a junior inspector and, in 1933, was appointed Technical Inspector, Locomotive Running Superintendent's Office, York. In 1938, Mr. Matthewson-Dick was appointed Locomotive Shedmaster at Newport (Middlesbrough) and, two years later, became Shedmaster, Haymarket Depot, Edinburgh. In 1941 he became Shedmaster, St. Margaret's Depot, Edinburgh. In 1943 he was appointed Technical Assistant to the Locomotive Running Superintendent, York, and four years later became District Locomotive Superintendent, York. In 1952 he was appointed District Locomotive Superintendent, Newcastle and, in 1956, returned to York as Assistant Motive Power Superintendent for the North Eastern Region, the position he now vacates. During 1932-48, Mr. Matthewson-Dick lectured on mechanical and electrical subjects at Rutherford Technical College, Newcastle-on-Tyne; Constantine Technical College, Middles-

Mr. T. S. Rogers

Appointed General Traffic Manager, South Australian Railways

Mr. C. R. Lovatt

Signal & Communications Engineer of the New Zealand Railways who has retired

Mr. J. M. Oelofsen

Appointed Relieving System Manager, South African Railways

brough, and the York Technical College. He is a Vice-President and Member of the Council of the York Railway Institute, a Past-President of the York Locomotive Society, a Member of the Committee of the York Engineering Society, and Chairman of the North Eastern Centre of the Institution of Locomotive Engineers. He is President of the Heaton Junction branch of the British Railways Staff Association.

Mr. J. K. Firth, District Goods Superintendent, Newcastle-on-Tyne, North Eastern Region, British Railways, who, as recently recorded has been appointed District Goods Manager, Birmingham, London Midland Region, joined the London Midland & Scottish Railway, as a clerk in the Goods Department, Harrow & Wealdstone in 1935. After experience at a number of goods and passenger stations in the London district, was selected as a Traffic Apprentice in 1937. His training was interrupted by the war and, from 1940 to 1945, he served in the Forces, mainly in the Middle East. In 1946 he returned to railway service as Acting Goods Agent, Oldham and, in 1947, was appointed Goods Agent, Willesden. Mr. Firth was appointed Goods Agent at Reading, in 1950, and at Leeds, Hunslet Lane, in 1952. In 1954 he served on the North Eastern Region General Manager's Productivity Committee and, in 1955, became Assistant District Commercial Superintendent, Hull. Later in the same year he was promoted to be Assistant District Goods Manager, Broad Street, London. Mr. Firth was appointed District Goods Superintendent, Newcastle-on-Tyne in 1957.

Mr. T. S. Rogers, Assistant to the General Traffic Manager, South Australian Railways, who, as recorded in our June 26 issue, has been appointed General Traffic Manager, was born, in 1903, at Adelaide. He was educated at Adelaide High School, and Adelaide University, where he obtained a Bachelor of Engineering degree, in 1928. Mr. Rogers entered railway service as a structural draftsman. He then became Resident Engineer, Port Pirie, during the construction of the Red Hill—Port Pirie line, 1936-37, and in June, 1937, was appointed Assistant Superintendent, Maintenance, Murray Bridge Division. In 1940 he moved to Adelaide to assist in the munitions and explosives factories at Finisbury and Salisbury. In 1941 he was transferred to the Peterborough Division, as Assistant Superintendent. In 1946 Mr. Rogers was appointed Superintendent, Peterborough, and in 1950 he moved to the Adelaide Division in the same capacity. In 1953 he was appointed Assistant to the General Traffic Manager, the position he relinquished to take up his present appointment.

Mr. C. R. Lovatt, M.Sc., A.M.I.E.E., A.M.I.C.E., M.I.R.S.E., Signal & Communications Engineer, New Zealand Railways, who, as recorded in our May 25 issue, has retired. He joined the Railways Department, in 1921, as an engineering cadet. Later Mr. Lovatt attended Victoria University College, Wellington, where he graduated B.Sc. in 1927, and M.Sc. in 1928. He was appointed Assistant Engineer in 1928, First Assistant Engineer (Signals) in 1931, and Assistant Signal & Electrical Engineer in 1939. In 1947 he was appointed Chief Signal & Electrical Engineer. The appointment was later redesignated Signal & Communications Engineer, as a result of consolidation of the Signal & Electrical Branch with the Way & Works Branch. Mr. Lovatt has been associated with many technical developments in New Zealand, including the introduction of single and double-line automatic signalling, power interlocking, and centralised traffic control. He was one of the signal engineers who were originally responsible for the introduction of C.T.C. equipment in New Zealand in 1938. Mr. Lovatt was a member of a number of the committees of the New Zealand Standards Institute.

Mr. J. M. Oelofsen, Assistant Chief Superintendent (Staff), South African Railways, who, as recorded in our August 28 issue, has been appointed Relieving System Manager, was born in 1914, and joined the railways in 1934. Mr. Oelofsen became Assistant Secretary to the Minister of Transport in 1953, and Secretary to the Railway Board in 1954. A year later he was appointed Administrative Secretary to the Minister of Transport. In 1956, he became Chief Superintendent (Parliamentary) at headquarters and in the same year was made Assistant Chief Superintendent (Staff).

Mr. J. Whyte, Manager, London Derry & Lough Swilly Railway, has been elected Chairman of the 1960 Managers' Conference of the Irish Railway Clearing House.

Mr. Andrew Laird, Technical Officer, Combustion Engineering Association, has relinquished his position to take another appointment. He is succeeded by Mr. T. G. Edmondson.

We regret to record the death on September 9, at the age of 66, of Mr. H. E. Thompson, who was Chief Engineer of the former South Indian Railway, from 1943 to 1947.

Mr. C. H. Frankland, has retired from the board of British Insulated Callender's Construction Co. Ltd. Mr. R. Betley has been appointed Executive Director of the company.

Mr. L. L. Boyd, Managing Director, United Steel Companies (India) Private Limited, and Director, United Steel Companies (Pakistan) Limited, is shortly to return to the United Kingdom. From March 1, 1960, he will become Deputy Commercial Manager at United Steel's Steel Peech & Tozer, Rotherham Branch.

Mr. K. Chatterton, Chief Engineer, English Steel Corporation Limited, and Mr. A. M. Simmers, Secretary & Chief Accountant, have been appointed Special Directors of the company. Mr. A. Taylor, Chief Accountant, subsidiary companies, also becomes a Special Director of the parent company.

L.M.R. Appointments

London Midland Region, British Railways, announces the following appointments:—

Mr. F. J. W. Wagstaff as Assistant District Passenger Manager, Euston.

Mr. E. S. Firth as Assistant District Traffic Superintendent, Stoke.

Mr. F. Mitchell as Assistant District Operating Superintendent, Liverpool (Central).

Mr. A. Pygott as Assistant District Traffic Superintendent (Commercial), Chester.

Mr. T. M. Dickinson as Assistant District Operating Superintendent, Rugby.

Mr. P. N. Fazakerley as Assistant (Special Duties), Public Relations & Publicity Office, Euston.

Mr. W. Stewart as Line Controller (Passenger & Freight Services), Line Traffic Officer's Office, Manchester.

Mr. S. Atkinson as Assistant to District Operating Superintendent, Crewe.

Mr. A. R. Grattidge as Assistant Works Accountant, Gorton.

Mr. J. D. McCarten as Marine Engineer, Heysham.

Mr. C. R. Curtis has resigned from the board of A.B.C. Coupler & Engineering Co. Ltd.

Mr. F. G. Harris, Film Producer, Carborundum Limited, has been awarded the Fellowship of the British Kinematograph Society. This is the first occasion that the honour has been bestowed on an industrial film producer within industry.

Mr. William L. Mather will become Chairman of Mather & Platt Limited on April 1, 1960. He will succeed Mr. L. E. Mather, who is to retire from the board the previous day. Mr. William Mather has been a Director of the company since 1947. He is a member of the committee of the Russo-British Chamber of Commerce.

Mr. A. K. McCosh and Mr. H. C. Waterson, for health reasons, have resigned from the Chairmanship and Vice-Chairmanship respectively of William Baird & Co. Ltd. They have also resigned from the board of Bairds & Scottish Steel Limited. Mr. McCosh will retain his seat on the board of William Baird & Co. Ltd.

Iraqi Republic Railways

Mr. Hassan Al-Talabani has been appointed Minister of Communications, Iraq, and the following appointments recently have been made on the Iraqi Republican Railways, formerly the Iraqi State Railways:

Director-General, Staff Major General, Mr. S. Z. Tawfiq.

Technical Inspector General, Mr. J. Toma.

Acting Financial Secretary, Mr. E. Zarah.

Secretary, Railway Board of Management, Mr. H. El Rahal.

Assistant Director-General, Mr. A. Sha'ban.

Chief Translator, Mr. E. Lawrence.

Director (Administration), Mr. F. Hussain.

Director (Personnel), Mr. A. T. Ali.

Traffic

Traffic Manager, Mr. F. Yassin.

Chief Inspector, Mr. A. M. Rubaee.

Assistant Traffic Manager (Commercial), Mr. F. Jewad.

Assistant Traffic Manager (Movement), Mr. F. Yousif.

Mechanical

Chief Mechanical Engineer, Mr. M. A. Hussain.

Assistant Chief Mechanical Engineer (Works), Mr. N. D. Rubaee.

Assistant Chief Mechanical Engineer (Power), Mr. P. A. Messih.

Electrical

Chief Electrical Engineer, Dr. Nuriddin Rubaee.

Engineering

Chief Engineer, Mr. R. H. Hadid.

Chief Engineer (Construction), Mr. M. Haba.

Deputy Chief Engineer (Maintenance), Mr. A. A. Rasheed.

Deputy Chief Engineer (Capital Works), Mr. B. Juma.

Accounts

Chief Accountant, Mr. E. Zarah.

Audit Department

Chief Auditor, Mr. T. Al-Rawee.

Medical

Chief Health Officer, Dr. H. Shareef.

Stores

Chief of Stores, Mr. S. Ra'ouf.

Technical Expert (Stores), Mr. A. R. M. Murad.

Lands Department

Director of Legal Affairs & Lands, Mr. R. El-Shibibi.

Police Department

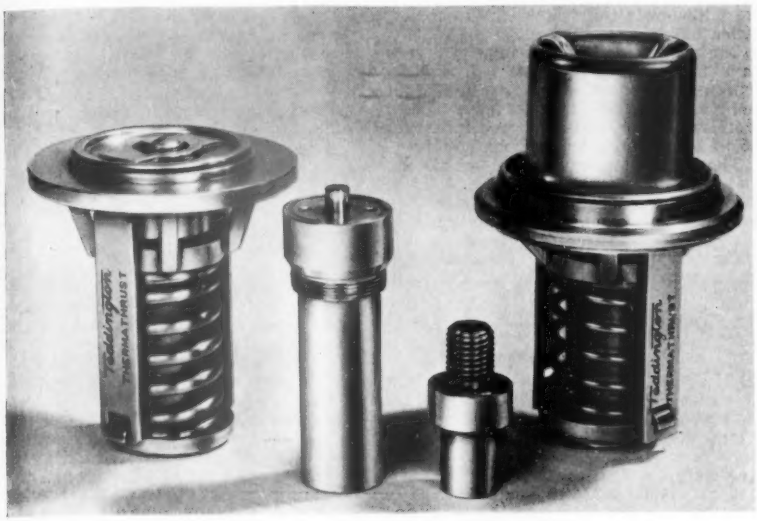
Commandant of Railway Police, Mr. S. Al-Tikreeti.

Iraqi Airways

Manager, Colonel M. R. Hassan.

Technical Adviser, Mr. E. T. Johnston.

NEW EQUIPMENT AND PROCESSES



Thermal Power Element

ALTHOUGH primarily associated with coolant thermostats in pressurised systems, the Teddington Thermathrust has characteristics to commend its use in many industrial fields where powerful thrust combined with ample movement is required on change of temperature. These applications could include the operation of shutters, actuation of electrical contacts, and the warning and control of high temperatures in heavy vehicle power units.

The instrument derives its power from a material with a high coefficient of volumetric expansion over a narrow temperature band. This material is contained in a non-ferrous body and, on application of heat, causes expansion of an actuating rod. The illustration shows the individual power elements.

The manufacturer can develop and select suitable elements for applications within the temperature range of 90 deg. F. to 200 deg. F. and with movements of up to 0.7 in.

Further details can be obtained from P. W. Baker & Sons (Sales) Limited, Teddington Works, Sunbury-on-Thames, Middlesex.

Additions to Desoutter Range

ADDITIONS to the Desoutter range of tools include a pneumatic grinder and the manufacturer's first reversible corner nut runner.

The grinder is available in two forms—collet type (SR. 11) or spindle type (SR. 12). Both versions are driven by the maker's Super Rotor motor. Mounted points for general-purpose use with SR. 11 grinders are available in two grades—coarse, for use on cast iron, and fine, for use on high-speed steels. All shanks are ¼ in. dia. × 1¼ in. in length. For the SR. 12, 2-in. 1¾-in., and 1¾-in. wheels are available. Speed is 16/18,000 r.p.m.

The nutrunner incorporates the manufacturer's Super Atom reversible pneumatic motor. It can locate nuts to within 11/32 in. of a corner. Other features include a new design of air-valve ensuring leakproof operation and wide use of " O " rings for complete sealing of all high-pressure air. The tool is supplied as standard with a lever control handle and suspension bail, and is fitted with a 9/32-in. square drive for use with a wide range of standard hexagon sockets.

Further details of both products can be obtained from Desoutter Bros. Ltd., the Hyde, Hendon, London, N.W.9.

Additions to Dexion Range

TWO accessories for use with slotted angle have been added to the Dexion range of products. They are a T-section plastic foot and a 4-in. rubber castor.

The foot is designed for use with " 140 " (1⅜ in. sq.) angle. Of tough grey plastic, it protects floor surfaces and gives non-slip contact. It is easily screwed to the floor for added rigidity. Cost is 8d.

The castors give better and easier handling of heavy loads on uneven surfaces than the manufacturer's 2½-in. castor. Each castor can take a load up to 200 lb. Cost for fixed-type 4-in. castor is 14s. 6d., that of the swivel type is 23s. 6d.

Further details of both these products can be obtained from Dexion Limited, Maygrove Road, London, N.W.6.

Compact Traction Batteries

THE new Exide-Ironclad battery gives up to 35 per cent more power in the same space, for about the same weight, and with a livelier performance, than that of the manufacturer's existing product.

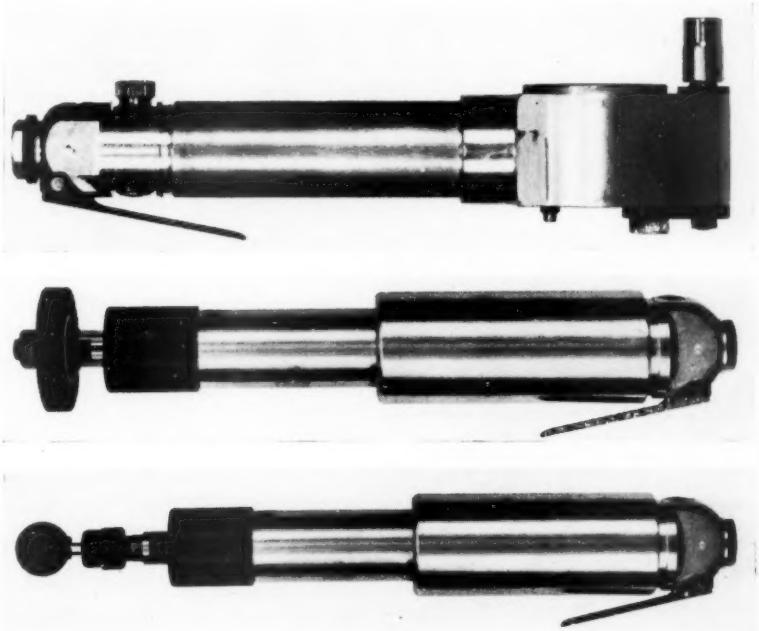
Advantages claimed include greatly-increased capacity for housing in existing compartments, more work per shift, or permit longer shifts to be worked; greater freedom in truck design, and a wider field for electric truck applications.

A multi-tubular " gauntlet " of resin-impregnated Terylene cloth is slipped over the spines of CB. 95 alloy of the positive plate. This holds the active material in a firm but elastic grip. The Terylene used has a tensile strength of more than 40 tons per sq. in. and is capable of sustaining an extension of 80 per cent. It can accept extensive forces yet is so resilient that it returns to its normal state throughout a long life. It contains no corrosive agents.

The " gauntlet " enables the electrolyte to penetrate freely to the active material, shedding of which is minimised. This plate construction combines improved capacity with strength, durability, and high output per unit of volume.

The bottom of the positive plate is a polythene moulding of special design to ensure that the tubes of the " gauntlet " are effectively and permanently sealed. It also serves as an insulator and is not subject to corrosion.

The negative plates are armoured with sleeves of Porvic to eliminate internal short circuits. Cell containers are moulded from



specially-toughened hard rubber to guard against leaking cells and minimise damage from road shocks, vibration, and rough treatment.

Further details can be obtained from the manufacturer, Chloride Batteries Limited, Exide Works, Clifton Junction, Swinton, Manchester.

Drill Point Thinner

THE Dormer drill-point thinning machine can deal with two-flute drills from 5/16 in. to 3 in. with spiral or straight flutes and straight or taper shanks of an overall length up to 24 in. It can be ordered to accommodate longer drills.

The following advantages are claimed: improved point-thinning; one size of wheel for all known types of thinning; no special shaping of the wheel; automatic correct modification of core; quick and simple loading of the drill and changing from one diameter to another; full adjustment for various types of thinning.

The drill is stationary during grinding and is supported at the point by a conical rest and located by a "V" stop. The drill holding unit is swivel-mounted to give universal positioning of the drill. All setting positions are clearly marked for each diameter. The grinding wheel assembly is pivot-mounted to enable the wheel to be swung manually through the flute. Feed is automatic: after one side of the web has been ground, a stop is locked to ensure identical depth of thinning on the other side. Correct shape of thinning is achieved on drills of all sizes by calibrating the grinding wheel axis in relation to the pivot.

Base dimensions are 16 in. by 22 in., and height is 57 in. Gross weight is 6¼ cwt. Power is by a ½-in. h.p. totally-enclosed 3,000 r.p.m. motor using 380-440-V. 50-cycle supply.

Further details can be obtained from the Sheffield Twist Drill & Steel Co. Ltd., Summerfield Street, Sheffield, 11.

Aftercooler and Anti-Surge Tank

A COMBINED aftercooler and anti-surge tank has been developed for medium-output stationary air compressors. It is claimed to provide a greatly-improved method of cooling large quantities of compressed air. The unit, designed to handle 525 cu. ft. of air per min. at a maximum pressure of 150 lb. per sq. in. uses a four-pass system for airflow. The cooling elements are "U" tubes of highly-finned copper or copper-alloy tubing expanded into a fixed tube-plate through which the cooling water passes.

The chamber of the anti-surge tank acts as a cushion in the discharge and, with the anti-surge plate, ensures an even flow of air to the tubes and also decreases noise. When working to capacity, the aftercooler requires 16 to 18 gal. of water per min.

The unit weighs approximately 750 lb., and is 25 in. × 19¾ in. × 43¾ in. high. The air inlet and outlet ports are 4 in. dia., and the water inlet and outlet ports are 1½ in. dia.

Further details can be obtained from Holman Bros. Ltd., Camborne, Cornwall.

Thermoplastic Material

POLYPENCO K.51 is an entirely new chemically-inert thermoplastic material claimed to possess good mechanical strength, temperature and chemical resistance and dimensional stability. It is completely non-hygroscopic and has good outdoor weatherability. It is inert to almost all alkalis, solvents, chlorides, and inorganic acids and thus applicable for bearings, valve seats, seal gaskets, washers, impellers, and other parts operating under severe corrosive conditions.

Tensile strength is 6,000 lb. per sq. in. There is high resistance to deformation under load and very low cold-flow tendency. Finished parts are structurally tough and durable. While heat distortion temperature is in the same general range as that of Nylon 66, the material can be subjected to continuous operating temperatures from 120-130 deg. C. in an oxydising atmosphere. Good electrical insulating and dielectric properties are claimed and loss factor is said to be low over a wide frequency range.

The new material is available in a wide range of extruded shapes which are readily machinable into component parts on conventional metalworking equipment.

Further details can be obtained from Polypenco Limited, 68-70, Tewin Road, Welwyn Garden City, Herts.

Handling Equipment

THE range of Dempster-Dumpster container-handling vehicles and equipment is now being manufactured under licence in this country. Dempster-Dumpster is the registered trade-mark of Dempster Brothers of Knoxville, U.S.A. Dempster equipment is mounted on standard commercial road vehicles and the range consists of vehicles in four series with containers in a great variety of types and sizes.

The "L.F.W." series of vehicles will lift, transport, and dump from 6,000 to 50,000 lb. net loads in containers ranging from 1 to 15 cu. yd. capacity in a variety of types. Pick-up is by chain slings attached to the container by hand—all other operations are controlled from the driver's cab.

The "G.R.D." will handle containers of the above sizes and capacities with a maximum lift of 9,000 lb. net to a dumping height of 10 ft. clearance. It can load into rail wagon or road vehicle. Pick-up, dumping, and replacement of container is controlled from the cab.

The "Dumpmaster" series includes vehicles of 18-, 24-, and 30-cu. yd. capacity with hydraulic compaction up to 3 : 1. They will self-load from containers of 1 to 6 cu. yd., picking up automatically and lifting net loads up to 6,000 lb. per container.

The "Dinosaur" can hydraulically pick up or put down on ground, wharf, lorry, or flat-rail vehicle, its own body loaded or empty. Body sizes range from 10 to 40 cu. yd. in a variety of designs.

Detailed literature is in course of preparation and will shortly become available. Films demonstrating the operation of Dempster systems are available for screening. Further details can be obtained from the Powell Duffryn Engineering Co. Ltd., Cambrian Works, Cardiff.

Cold-Curing Silicone Rubbers

COLD-CURING Silastomers are silicone rubbers which need no heat cure, special equipment, or skill. Shrinkage on curing is low.

The rubbers are made in three grades: 9159, a heavy grade, which has the consistency of builder's putty and can be moulded, milled, or calendered; 9160, a medium grade which can be spread or applied by caulking gun; and 9161, a liquid form suitable for dipping, injection or impregnating. They can be used for encapsulation, caulking, sealing, filleting, and making flexible moulds from which resins and other materials may be cast at temperatures as high as 250 deg. C., and as low as −50 deg. C. They possess excellent dielectric properties and give protection against moisture, dust, oxidation and mechanical shock.

Further particulars can be obtained from the manufacturers, Midland Silicones Limited, 68, Knightsbridge, London, S.W.1.

Welding Equipment

NEW welding equipment developed by British Oxygen Gases Limited includes the Saffire lightweight welding blowpipe and a range of single-stage oxygen and acetylene regulators.

The blowpipe is an extension to a range developed for welding sheet metal and light welding repairs. It is extremely light and has forward-mounted controls for easy adjustment. A range of nine different nozzles is available.

The oxygen and acetylene regulators—SOR. 1 and SAR. 1 are robust and inexpensive. They are particularly suitable for general cutting and "on-site" work.

Further details can be obtained from British Oxygen Gases Limited, Spencer House, St. James's, London, S.W.1.

Electrodes for Hard-Facing

INCREASED savings in maintenance costs of heavy-duty plant are claimed from the use of Cobalarc electrodes, which provide a complete range of hard-facing products suitable for almost any type of plant subject to wear-down.

Six types of electrode are graded according to properties of deposit, with resistance to maximum abrasion at one extreme and maximum impact at the other. Deposits are also resistant to corrosive liquids and oxidation. Deposited alloys include tungsten-carbide composites, chromium-carbide austenitic irons, cobalt and nickel-base alloys and martensitic, pearlitic, and austenitic steels.

Diameters rise to a maximum of 7/16 in., and moistureproof coverings permit storage under any conditions. The electrodes can be used with any conventional a.c. or d.c. welding power source and are suitable for use in shops or on site.

Further details can be obtained from Quasi-Arc Limited, Bilston, Staffs.

British Railways and London Transport Fare Changes

Cheaper daily and five-day off-peak tickets; ordinary fares increased by a farthing a mile

The Transport Tribunal last July authorised the British Transport Commission to raise the maximum second class fare on British Railways from 2d. to 3d. a mile with effect from August 1, 1959. The Commission delayed taking advantage of this authority until after the holiday season. Second class ordinary fares are now to be increased by ¼d. a mile from November 1. This amount will not be applied in full to journeys over 200 miles.

Increases are also to be effected in the ordinary rail and road fares in the London area and in early morning fares and in season ticket rates generally.

Off-peak Tickets

To encourage rail travel outside peak hours, daily and five-day off-peak tickets, substantially cheaper than day return tickets and weekly season tickets respectively, will be available for inwards travel from stations in the London area 10 miles or more from the central area all day except during the morning, and for return at any time except during the evening peak.

Mileage	New weekly season rates	Five-day off-peak ticket	New day return fares (British Railways)	Daily off-peak ticket
	s. d.	s. d.	s. d.	s. d.
10 ...	16 9	13 9	3 6	3 2
15 ...	21 9	17 9	5 0	4 6
20 ...	26 6	21 6	6 4	5 5
35 ...	36 0	29 3	10 10	8 8

Both tickets will be available on Monday to Friday inclusive, for one return journey a day from all British Railways stations in the London area to British Railways London termini and, in many cases, to L.T.E. stations in the central area by trains arriving at London termini not later than 8 a.m. or leaving starting points after 9.30 a.m. They will also be issued from L.T.E. stations 10 miles or more from the periphery of the central area (which is, broadly, bounded by the L.T.E. Circle Line) into Central London, except for journeys starting between 7.30 and 9.30 a.m. The tickets are not available for return between 4.30 and 6.30 p.m.

The charge for the five-day off-peak ticket will work out at nearly 20 per cent less than the weekly season ticket. The daily off-peak ticket will be cheaper than the day return ticket.

Examples of the new off-peak fares, compared with the new weekly season ticket rates and day return fares, are shown in the table.

Ordinary Fares

Ordinary fares on British Railways (except the L.T.S. Line of the Eastern Region) will be increased from 2d. to 2¼d. a mile second and from 3d. to 3⅜d. a mile first class on journeys of up to 200 miles. For the next 100 miles the second class rate will be 2.1d. a mile. After 300 miles the rate will remain at the present 2d. a mile. There will be a certain amount of rounding up to the nearest 3d., 6d., or 1s., according to distance.

On L.T.E. rail and road services and on the L.T.S. Line the 3d., 4d., and 5d., which represent 64 per cent of all passenger journeys on L.T.E. services, will remain unchanged. Some 6d. fares which were not raised to 7d. in August will now go up to that figure. General increases in L.T.E. bus and Underground fares start with 8d. to 2s. 1d. fares, to be increased by 1d.; 2s. 2d. to 3s. 2d. fares go up by 2d.; 3s. 3d. to 3s. 11d. fares by 3d., with higher increases for longer journeys.

Day return fares on British Railways London lines will continue to be double the ordinary fares on London Transport L.T.E. and the L.T.S. Lines.

Early Morning Fares

New early morning fares range from 2s. 9d. (an increase of 4d.) for 10 miles, to 5s. 5d. (1s.) for 30 miles, and 8s. 7d. (1s. 8d.) for 60 miles. L.T.E. early morning single bus fares are increased by 3d. Early morning return Underground fares go up by 3d. for the 1s. 7d. fare, and 4d. for fares up to 2s. 11d. with higher increases for longer journeys.

Season Ticket Rates

The new season ticket scale will be common to British Railways and London Transport. Monthly season tickets in the London area will be increased from about 4 per cent at two miles to about 15 per cent at 24 miles and farther.

The weekly rate will remain about one-quarter of the monthly rate *plus* 10 per cent and the rate for three months at three times the monthly rate less 10 per cent.

New Travelling Post Office

A new set of rolling stock has been placed in service on British Railways, Western Region, to work the "Great Western Travelling Post Office Down." The new stock made its first run from Paddington to the West Country on October 19-20.

Provision for Modification

The new vehicles are of steel construction, built on a standard underframe 63 ft. 6 in. long, and have a body width of 9 ft. All previous postal vehicles have been fitted with side gangways, but the new coaches are of the centre gangway design. The sorting fittings are separate standard units which can be easily removed, if need be, to provide for any further developments in Post Office sorting office processes which might come before the carriages reach the end of their running life. Fluorescent lighting provides greatly improved illumination for the sorting staff. Fibre-glass insulation has been installed to reduce noise and temperature extremes. Heating is from two 2-in. overhead steam pipes each separately controlled for temperature variation.

This T.P.O. has a staff of about 30, and for their refreshment each carriage is fitted with an electric water heating appliance and a small oven: each carriage has toilet facilities. Special attention has been given to draught prevention, improved ventilation and natural lighting. Gangway doors at each end of the vehicles are electrically-controlled by a large push button which can easily be operated by staff laden with letters or mail bags.

The design of the new coaches is the result of co-operation between British Railways and the Post Office and were built at Wolverton Works, British Railways, London Midland Region. Unlike the previous T.P.O. rolling stock designed only to run on specific routes or in a particular railway region the new vehicles will be able to run in any region.

Interior of travelling post office, showing centre vestibule gangways and arrangement of fluorescent lighting

New Motor Vessel for Irish Shipping Services

The Ailsa Shipbuilding Co. Ltd., on October 1, launched from its yard at Troon the twin-screw cattle-and-container-carrying vessel mv. *Slieve Donard* for the Irish shipping services of the British Transport Commission. The naming ceremony was performed by Mrs. Reed, wife of Captain J. D. Reed, Manager, Irish Shipping Services.

The vessel has been designed for the carriage of livestock, containers, cars, and general cargo between Heysham and Belfast, and Holyhead and Dublin. The spaces for cattle and horses meet the highest standard required by the Ministry of Agriculture & Fisheries, special attention having been given to the carriage of valuable bloodstock and racehorses. Unlike existing "Slieve" vessels serving these ports the *Slieve Donard* is of the shelter deck type giving complete cover for

cattle and containers on the main deck.

The design and size of the hatches has been arranged to assist in speedy turnround, with Macgregor steel covers on the shelter deck. Winches and derricks are not fitted as the containers will be handled by dockside cranes and the cattle loaded and discharged through specially-designed ship-side entrances. Provision is made for the carriage of palletised cargo and wheeled vehicles on the main deck, loaded through gate-type watertight doors in the stern of the vessel. A total of 25 large railway containers, 685 cattle, and 14 horses can be carried or 43 large railway containers, 511 cattle and 14 horses.

A total deadweight of 950 tons will be carried on a loaded draft of 13 ft. at a speed of 14 knots. The principal dimensions are: length B.P. 292 ft., beam 45 ft., depth to main deck 16 ft. 6 in., depth to shelter deck 25 ft. 1 in. The gross tonnage will be about 1,400.

Propulsion will be provided by two M48M Polar diesel engines capable of developing a total of 3,000 b.h.p. at 300 r.p.m. Electrical requirements will be supplied by three 100 kW. generators each driven by a Lister-Blackstone diesel. All accommodation for officers, crew, drovers, and grooms is situated above the shelter deck amidships, and will be of a high standard.

Modernised Cafeteria at St. Pancras Station

A new self-service cafeteria with many novel features, including a quick-cook unit, opened at St. Pancras Station, British Railways, London Midland Region, on October 15, to provide grills to order, hot joints and fish, cold meats, and sandwiches at popular prices in pleasant surroundings. There is also a kiosk for chocolates and cigarettes.

The new cafeteria called " The Midland " has access to a new popular " London Bar." The cafeteria will seat 100 and the bar 40. Each is the latest word in hygiene and there is clean air conditioning throughout.

The kitchens are tiled from floor to ceiling, there is a random marble floor, and all equipment is stainless steel. The cafeteria has formica plastic walls in red and grey and yellow and black. Another feature, and a new idea in furnishing, is that the legs of tables and chairs are plastic covered.

The cafeteria will serve from 7 a.m. to 11 p.m. daily (8 a.m. to 10 p.m. Sundays) and its opening marks the completion of the new range of catering facilities at St. Pancras Station which began with the opening of the " Shires " first class restaurant a year ago.

The main contractor for the new cafeteria was Marshall Andrew & Co. Ltd., St. James Park, London, S.W.1.

Open Days at B.I.C.E.R.A. Laboratories

The research laboratories of the British Internal Combustion Engine Research Association at Slough were open for inspection on October 15 and 16 by the staffs of member companies and other guests. Programmes were arranged to include a brief lecture by the research engineer specialising in the subject under investigation at each important station and test rig. The number in each party of visitors was strictly limited to enable individual questions to be answered in detail.

Search for More Power

The work of the laboratories is frequently changing according to the needs of the diesel engine industry but the main object of research now is development for more power with reliability from the same package. As specific outputs continue to rise there is a diminishing return for a given expenditure of effort. To meet world competition even small gains in power are important and research findings which assist in obtaining them are of great value.

Investigations currently taking place include tests on a Mirrlees TL3 turbo-charged engine of bore and stroke 8½ in. x 13¾ in. with Bicera variable-ratio pistons and an early form of the Bicera fuel injection system. These two devices have enabled the engine to run without distress at over 290 lb. per sq. in. brake mean effective pressure at a mean piston speed of 1,375 ft. per min. and with a boost pressure of 22.7 lb. per sq. in. gauge. The purpose of varying the compression ratio is to limit automatically the maximum cylinder pressures as the b.m.e.p. is increased. Ceramic coatings to form a heat barrier in the piston are also being tested.

A recent development exhibited is a radio telemetering system intended primarily for transmitting signals from transducers mounted on moving parts of an engine and also applicable to stationary strain gauge transducers. Another experiment concerns the modification of noise-radiating surfaces on a diesel engine. Exhaust noise is investigated by means of a rig which gives a single exhaust release to enable a better understanding to be gained of the principles involved.

The Bicera compressor of variable compression and variable throughput, already well known and being manufactured under licence in Britain and the U.S.A., was demonstrated in model form. The Bicera crankcase relief valve, which has a gauze flame trap mounted on the housing inside the crankcase where it is wetted by lubricating oil, is claimed to be about six times as effective as an external gauze assembly.

Rigs for testing coupling torsional stiffness, the damping effect of bearings, the de-tuning effect of pistons, water-side attack on cylinder liners, and gas flow past poppet valves were shown, and demonstrated where practicable. Explanations were given of work being undertaken on the investigation of service failures by the Stress Analysis Section and on future experiments by the Combustion Research Section.

New B.T.C. Police Headquarters Opened

A new British Transport Commission Police Headquarters, which has been established at Park Royal in north-west London, was opened on October 15 by Mr. K. W. C. Grand, a Member of the British Transport Commission and Chairman of the Commission's Police Committee. The new headquarters are housed in a modern building, specially adapted for the purpose, with accommodation for the Chief Constable, Mr. Arthur C. West, and headquarters staff for the whole B.T.C. force, which has a total establishment in the country of about 3,000 men and women.

Reorganisation of Force

Mr. West, formerly Chief Constable of Portsmouth, was appointed Chief Constable of the B.T.C. Police last year with a special responsibility for the reorganisation of the force in accordance with the Commission's policy. The establishment of the new headquarters is an important part of the reorganisation. The centralisation of the Administration and Investigation Departments is another important feature. The number of C.I.D. staff, for example, dispersed through the six Regions of the force in England, Scotland and Wales, has been re-deployed and certain important functions which require attention on a national basis will be supervised by Mr. W. O. Gay, as Chief of Police (Crime) at Headquarters, with Mr. Melbourne Phillips, formerly Chief Detective Superintendent at Bristol, as Assistant Chief of Police. The C.I.D. staff at Headquarters include officers of all ranks specialising in various types of crime, who will be available to advise local detective staff of the force as required and to give actual assistance on the spot if necessary. In the near future, as a further stage of the reorganisation, new Area Headquarters are to be opened in Manchester and Bristol.

Present at the ceremony were members of the B.T.C. Police Committee; Sir Joseph Simpson, Commissioner of Police of the Metropolis; Mr. R. L. Jackson, Assistant Commissioner, C.I.D., New Scotland Yard; Sir Alexander Maxwell; and the Area Chiefs of B.T.C. Police.

General view of cafeteria showing sandwich bar and grill counter on the right

Contracts and Tenders

Two-tier motorcar transporter wagons for the Western Region

The Western Region of British Railways has placed an order with Newton Chambers & Co. Ltd. for six two-tier motorcar wagons known as "Tierwags." The vehicle was described and illustrated in our issue of March 14, 1958.

Plasser Railway Machinery has received an order from the South African Railways for six Plasser super tampers, model "VKR-03," and from the New South Wales Government Railways for two tampers of the same type.

The London Transport Executive has placed a contract with Whyatt (Builders) Limited for the reconstruction of Wapping Station on the East London line. The work includes the restoration of the lift machine room and the top and sides of the war-damaged lift house, as well as the provision of a new station entrance and ticket office. The contract is valued at some £12,900. Work was started on October 19, and should be completed in about a year's time.

British Railways, Eastern Region, has placed the following contracts: —

B. Finch & Co. Ltd.: supply, delivery and erection of welded tubular building at Norwich Trowse

G. Wimpey & Co. Ltd.: provision of foundations and surface water drainage and the re-surfacing of approach road in connection with new warehouse accommodation at Norwich Trowse

Aerocem Limited: grouting of slips in embankments at four sites in the Stratford district

R. Ridd & Son (Contractors) Ltd.: cleaning and painting of buildings, main roof, and structures, at Kings Cross Main Line Station.

British Railways, London Midland Region, has placed the following contracts:

Connell & Finnigan Limited: demolition of existing station buildings at Manchester London Road Station

The Trinidad Lake Asphalt Co. (North Western) Ltd.: resurfacing of platforms at Liverpool Lime Street Station

Leonard Fairclough Limited: diesel oil fuelling plant and additional workshops at Wigan Springs Branch Motive Power Depot, and reconstruction of superstructure and widening of bridge 14 on Lean Valley line

United Steel Structural Co. Ltd.: supply, fabrication, and delivery of steelwork and concrete deck units for bridge 40 on Blackburn & Hellifield line

Harbour & General Works Limited: provision of diesel fuelling facilities at Crewe Locomotive Works

Whatlings Limited: earthworks, drainage, road works, and fencing at Kingmoor Marshalling Yard, Carlisle

Rubery Owen & Co. Ltd.: supply, fabrication, and delivery of steelwork for superstructure of bridges Nos. 50, 69, 77, 43, 60, 6, 9, 15, 27, 124 and 127 on Trent Valley line

Leonard Fairclough Limited: reconstruction, adding new span, and widening for the Ministry of Transport of bridge No. 83 on Grand Junction line between Bushbury and Stafford.

British Railways, Scottish Region, has placed the following contracts:

John Best (Contractors) Limited: passenger station reconstruction work, Cowdenbeath

Steels Engineering Products Limited: three diesel-electric mobile cranes for goods stations in the Scottish Region

James White (Contractors) Limited: realignment of railway and diversion of road, Camelon Viaduct, Falkirk High

Butler Machine Tool Co. Ltd.: two rail planing machines, Motherwell permanent way workshops

Westinghouse Brake & Signal Co. Ltd.: colour-light signalling south of the River Clyde

Kullen & Company, K.G., Germany: carriage washing plant, Bridgeton Central

T. Boland & Co. Ltd.: office and staff amenities block, Hyndland Rolling Stock Maintenance Depot

H. M. Murray & Co. Ltd.: earthwork embankment, drainage, etc., Bowling—Dunglass main line diversion

John Drysdale & Co. Ltd.: reconstruction and widening of Swinton Highway, over-bridge No. 86, Easterhouse.

The Special Register Information Service Export Services Branch, Board of Trade, has received calls for tenders as follow:

From Sudan:

2,000 tyres for carriage and wagon wheels.

The issuing authority is the Controller of Stores, Sudan Railways, Atbara. The tender No. is 2004. Prices should be quoted on both f.o.b. and c.i.f. Port Sudan basis, and tenders should be valid for two months from the closing date. Bids should be addressed to the Office of Controller of Stores, Atbara. The closing date is November 12, 1959. The Board of Trade reference is ESB/24236/59.

35 coach underframes, 60 ft. long.

The issuing authority is the Controller of Stores, Sudan Railways, Atbara. The tender No. is 1995. Bids should be sent to the Office of the Controller of Stores. The closing date is December 28, 1959. Prices should be quoted on both f.o.b. and c.i.f. Port Sudan basis and tenders must be valid for two months from the closing date. The Board of Trade reference is ESB/24632/59.

From Formosa:

1 double track automatic block signal installation with spare parts.

The issuing authority and address to which bids should be sent is the Central Trust of China, Purchasing Department, 68, Yen Ping Nan Road, Taipei, Taiwan (Formosa). The tender No. is US-664. This purchase will be financed by the International Co-operation Administration (I.C.A.), the agency through which the United States Government gives economic and technical assistance to other countries. The closing date is December 16, 1959. The Board of Trade reference is ESB/23746/59/I.C.A.

10 electric rail saws with power units, with three-phases indicator motor, 1 h.p., to be used on 100-110 V. line

10 pneumatic rail augers with power units, Ingersoll-Rand size RD 40 or its equivalent; spindle of drill built to taker ail drill chuck which will handle flat-beaded rail drill 1 in. dia., each with one spare rail drill chuck and six pieces drill of 1 in. dia.

The issuing authority and address to which bids should be sent is the Central Trust of China, Purchasing Department, 68, Yen Ping Nan Lu, Taipei, Taiwan. The tender No. is GFA6185. The closing date is October 27, 1959. The Board of Trade reference is ESB/24775/59.

From Thailand:

600 axle billets as per drg. No. LV19-2017/2, MR. 2002, LVI-2014.

The issuing authority and address to which bids should be sent is the State Railway of Thailand, Yod-Se, Bangkok. The tender No. is 02275. The closing date is November 2, 1959. Bids should be accompanied with a deposit of Bht. 20,000. The Board of Trade reference is ESB/24195/59.

From Cuba:

15,800 *tonnes* of open-hearth steel rail, 114·75 lb. per yd.
2,750 pairs of headfree 100 per cent toeless joint bars
20 sets of compromise rail joint bars, 115/100
180 sets of compromise rail joint bars, 115/80
18,000 track bolts, 1 in. dia.
18,000 washers
100 split switches, 16 ft. 6 in.
50 rigid bolted frogs, No. 8
5 rigid bolted frogs, No. 10
15 manganese frogs, No. 8
30 manganese frogs, No. 10
200 hook flange guard-rails
50 switch stands, 51-B.

The issuing authority is the Ferrocarriles Occidentales de Cuba, S.A. Bids should be sent to El Salon del Consejo Director, Segundo Piso de la Estacion Central, La Havana. The closing date is October 26, 1959. Local representation is advisable. The Board of Trade reference is ESB/24119/59.

Further details relating to the above tenders together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

Staff and Labour Matters

N.U.R. Wage Claim

The N.U.R. has referred its claim for a substantial increase in rates of pay for railway salaried and conciliation staff to the next stage of the negotiating machinery, the Railway Staff National Council, on the Management Side of which are representatives of the British Transport Commission, members of the area boards and General Managers of the Regions. The meeting of the council took place on October 23, and the full report of the proceedings will be given in our next issue.

Meanwhile, the Railway Pay Committee of Inquiry is proceeding with its investigations into railway pay and conditions of service and is also making comparison with appropriate outside industries. Good progress is being made in these investigations.

LONDON MIDLAND REGION CRUISES.—Because of success of a nine-day cruise by ss. *Duke of Lancaster* through the Scottish Lochs last month, British Railways, London Midland Region, is to run two next year, one in May and one in September. The *Duke of Lancaster* is also to make two cruises round Continental resorts in June. Normally the ship carries 1,800 passengers between Belfast and Heysham, but special refinements will be included for the cruises and there will only be accommodation for some 300.

Notes and News

Hotels Reservation Bureau at Euston.—A hotels reservation bureau has been opened in the enquiry office at Euston Station. This is an entirely new departure for British Railways. Passengers arriving at the station can book in at any one of 11 hotels in the Euston area before leaving the station.

Dunlop Half-Year Results.—Net profit by the Dunlop Group, after taxation for the first six months of 1959, was £3,150,000 compared with £2,640,000 for the corresponding period last year. The net trading balance was £10,520,000 as against £9,630,000, and the net profit attributable to the parent company £2,630,000 (£2,030,000). The interim ordinary dividend for the current year will be 4d. a 10s. stock unit, less income tax. After taking account of the recent bonus issue this is equivalent to the interim ordinary dividend rate of 5d. paid in the year 1958.

Improved Vestibule Curtaining for British Railways Coaches.—A superior grade of PVC vestibule curtaining material manufactured by Mellowhide Products Limited, South Molton Street, London, W.1, is being used by British Railways. It consists of Geon PVC-treated glass cloth, and is now in regular use on passenger coaches, where its toughness and ease of cleaning combine to make it suitable to withstand the amount of hard wear involved. Geon PVC is also flame-resistant. It is manufactured by British Geon Limited in the Distillers Plastics Group.

Move of Factory by G. Hunter (London) Limited.—The factory in South Benfleet of G. Hunter (London) Limited has been closed and moved to Grays, Essex. There, 15,000 sq. ft. of factory space is already completed and nearly an acre is concreted ready for additional buildings. Ample room for expansion includes provision for railway sidings. The buildings are arranged in clear spans of 50 ft. and 35 ft. The present production of patent adjustable loading ramps, cranes, stackers, and fork trucks is intended to be centralised as much as possible at Grays where, eventually, manufacture of the complete range of products will take place.

London Office for Lumley-Saville Organisation.—To improve the coverage of the requirements of contractors, civil engineers, and builders in the London area, the workshop and stores premises established in 1955 at Staines Road, Feltham, Middlesex, by the Lumley-Saville Organisation has been developed to include extensive offices and a showroom for International Harvester agricultural and constructional equipment. The opening by Mr. Robert M. Douglas, president of the Federation of Civil Engineering Contractors, took place on October 14. After the opening ceremony Mr. Douglas formally accepted the 3,000th British-made International Drott, a B6K3 model, on behalf of his company, Robert M. Douglas (Contractors) Limited.

Railway Benevolent Institution.—At a meeting on October 19, the board of the Railway Benevolent Institution granted annuities to four widows and seven members involving an additional annual liability of £255; 122 gratuities also were granted amounting to £1,182, to meet cases of immediate necessity. Grants made from the Casualty Fund during September amounted to £1,012.

North British Locomotive Co. Ltd. Dividend Warning.—Stockholders of the North British Locomotive Co. Ltd., have been warned not to expect any dividend in 1959 and, perhaps, not for two or three years. A statement by the chairman, Mr. T. Coughtrie, and the Vice-Chairman, Lord Reith, indicates that the loss for the half-year to July 10, 1959, is £986,567, and the value of the company to its equity owners is £375,592.

Petter and Armstrong Siddeley Engines at Building Exhibition.—Petters Limited, a member of the Hawker Siddeley Group, will show a selection from its 1½—104 b.h.p. range of engines at the Building Exhibition, Olympia, London, on November 18—December 2. Included will be air-cooled water-cooled diesel engines and air-cooled petrol and vaporising-oil engines. Examples from the Armstrong Siddeley diesel engine range also will be shown. Design changes in the Petter P.H. diesel range include the introduction of a gear-type lubricating oil pump, copper-lead main and large-end bearings, and drilled internal oil galleries. Maximum speeds are increased from 1,800 r.p.m. to 2,000 r.p.m. with appropriate increases in power.

London Transport District Line Resignalling.—As part of the £2,500,000 modernisation and improvement plan for the London Transport District Line, colour-light signalling of the L.T.E. standard two-aspect type has been brought into use on 2½ miles of the two local tracks running from east of Bow Road to a point between Plaistow and Upton Park. The junction between the London Transport lines and those of the Eastern Region at Campbell Road between Bromley and Bow Road Stations has been taken out of use and the points are to be removed. The signals and points at Plaistow and Bromley will eventually be remotely controlled from a new London Transport signalbox now being equipped at Barking. Until this box is ready for use the points and signals at Plaistow will be controlled from a temporary panel installed at that point, and the crossover at Bromley will not be used. On the completion of the Barking flyover works by the Eastern Region, the London, Tilbury & Southend Line and District Line tracks will be segregated as far as Upney and London Transport signalling will be brought into use on the District tracks.

Vans to Demonstrate Mayrath Conveyor.—To deal with enquiries for its Mayrath conveyors, Gordon Felber & Co. Ltd. of Oxford Circus, London, W.1, has mobilised a fleet of road motor demonstration vans to supplement the work of one introduced early this year. The Mayrath conveyor consists of a 6-in. dia. one-piece galvanised tube carrying inside it a rotating Archimedes type screw. It is already operating at installations in Britain handling a wide variety of granular and free-flowing materials.

Philips Universal Lead Castle, Price Reductions.—Reductions in the prices of the Philips Universal Lead Castle, which accommodates virtually all types of Geiger Muller counters, and scintillation and proportional counters with diameters up to 80 mm., are: PW 4122 sample slide assembly reduced from £27 to £15; PW 4123 lead disc from £7 15s. to £4; PW 4124 lead ring from £6 to £3. Any number of lead rings may be used to surround the sensitive area of the detector. Further details are obtainable from Research & Control Instruments Limited, 207, King's Cross Road, W.C.1.

B.E.A. Fare Cuts Planned.—Fare cuts varying between 15 and 25 per cent will be offered by British European Airways on some European routes by April 1, 1960, if the governments concerned give their approval. The cuts are intended to give cheaper tourist day fares to Spain, Italy, Portugal, France, Russia, and parts of Austria and Germany. Also new cheap night fares to Spain, Italy, Greece and Portugal are planned. In some cases the reductions will be greater between April 1 and mid-June. On November 1, 1959, B.E.A. will re-introduce the £8 winter week-end return fares between London and Edinburgh, and Glasgow and Belfast.

Increased Output of the United Steel Companies Limited.—Output figures of the United Steel Companies Limited, for coke, iron ore, and pig iron all show an increase in the financial year ended September 30, 1959, over the corresponding period last year. Ingot steel production was down by 110,782 tons, or just over 4 per cent, however, although the rate of recovery in the demand for steel which has taken place during the second half of the year indicates that the calendar year figures for 1959 will be better than those for 1958. In the case of Samuel Fox & Company, which was least affected by the recession, steel production rose during the financial year by 28,631 tons.

Withdrawal of Passenger Facilities at Holmfirth and Thongs Bridge Stations.—Passenger facilities will be withdrawn from Holmfirth and Thongs Bridge Stations (the Holmfirth Branch), North Eastern Region, British Railways, on and from November 2. Alternative facilities for passengers are provided by the Huddersfield Joint Omnibus Committee, the Yorkshire Traction Co. Ltd., and the West Riding Automobile Co. Ltd. Parcels traffic will continue to be collected and delivered by British Railways road motors, and facilities will be retained at Holmfirth and Thongs Bridge Stations for

International House, Staines Road, Feltham, the new office and showroom of the Lumley-Saville organisation

parcels to be handed in or called for by the public. There will be no change in the present arrangements for dealing with freight traffic.

B.I.C.C. Worcester Branch Telephone Number.—The telephone number of British Insulated Callender's Cables Limited, Worcester Branch Office, has been altered to Worcester 26966/7.

Colindale Station to be Rebuilt.—Colindale Station on the Northern Line of London Transport is to be rebuilt. The station was badly damaged by enemy action in September 1940. A temporary ticket hall built on the east side of the railway and giving access from the road, via the existing footbridge to the island platform, was brought into use on October 18. The new station entrance and ticket hall, at the south east corner of a block of shops and offices to be built in Colindale Avenue, will include staff accommodation, public lavatories, a switchroom, and a bank of public telephones.

Reduced Hire Purchase Rates for Massey-Ferguson Equipment.—The British Wagon Co. Ltd., in conjunction with Massey-Ferguson (Great Britain) Limited, has reduced its retail rates in the United Kingdom for hire purchase charges which apply equally to the new industrial range of Massey-Ferguson products recently announced. An example is the reduction from 20 per cent to 17 per cent for the rate for new machinery purchased over a period of 36 months. For 12 months the rate is reduced from 6 per cent to 5 per cent. Further reductions apply when the purchase price exceeds £1,500.

Materials Handling & Factory Equipment Exhibition Held at Birmingham.—At the Engineering Centre, Birmingham, earlier this week, a Materials Handling & Factory Equipment Exhibition was held by Engineering Services Limited in association with Trucks, Pallets, & Stackers Limited, Enser Equipment Limited, and T. & T. Works Limited. A single compact display showed a wide range of handling equipment including stacking and fork trucks with power and manual control, hand platform trucks, elevating platforms with pallets and skids, drum handling equipment and a variety of conveyor systems.

Eternit Film.—A film in colour entitled "Industry of Asbestos Cement–Italit–Mazza Process" (running time 35 min.) was recently shown at the British Council Theatre in Hanover Street, London, W.1. The film, which covered the activities of Eternit s.p.a. -Genoa (Italy), contained a section on the cement railway sleepers produced by the company. These sleepers, which are in use in Finland and Italy, are now standard equipment on the Italian State Railways. A demonstration sleeper is on view at the London office of the company at 39, Palace Chambers, Bridge Street, London, S.W.1.

Retford to Lincoln Direct Route to be Closed.—British Railways, Eastern Region, is to close the direct line from Clarborough Junction between Retford and Gainsborough, on the Sheffield – Grimsby main line, to Sykes Junction, on the Gainsborough – Lincoln line, from November 2. The three stations on the section, Leverton, Torksey, and Cottam, will be closed. Passenger trains between Lincoln Central and Retford will run *via* Gainsborough Lea Road. Local passengers will be catered for by existing bus services in the area. C. & D. services for parcels and goods sundries traffic will continue to be available at Retford and Gainsborough. Arrangements have been made for dealing with full wagon loads at stations in the area.

James Archdale & Co. Ltd. Telephone Address.—The telephone number of James Archdale & Co. Ltd., Blackpole Works, Worcester, has been changed to Worcester 27081 (six lines).

Hyster Limited and Ransomes Sims & Jefferies Limited.—An arrangement for common marketing of Hyster internal-combustion-engined trucks and Ransomes electric trucks in Great Britain has been agreed by Hyster Limited, Glasgow (subsidiary of Hyster Company, Portland, Oregon, U.S.A.) and Ransomes Sims & Jefferies Limited, Ipswich. Basically the arrangement provides for Ransomes to be the sole manufacturers of electric trucks and Hyster to be sole manufacturers of internal-combustion-engined trucks, all for marketing exclusively by Hyster Limited. Both companies will collaborate in design and engineering to the fullest extent. There is no financial link-up between the two companies.

Manchester Freight Service Terminal Facilities Improved.—Following extensive reconstruction and modernisation, the goods depots at Ancoats and Ardwick East, is operating under a new "one-way" system. Traffic previously delivered from the two depots will be concentrated through Ardwick East, and traffic for forwarding will be concentrated through Ancoats. A unified motor fleet will operate for the delivery and collection of traffic. The resultant increase in the efficiency of handling sundries traffic will cater for any increase in tonnage. Additional tracks have had to be laid at Ancoats and Ardwick East and increased accommodation provided for the parking of road-motor vehicles.

Inspection of Station and Installations at Weymouth.—Sir Philip Warter, Chairman of the Southern Area Board, British Transport Commission, visited Weymouth on October 13, to inspect the station and other railway depots and installations. He met representatives of the staff and later the Mayor, Alderman E. W. Priddle, who is Station Inspector at Weymouth, and other holders of civic office. The illustration shows (left to right): Mr. D. McKenna, Assistant General Manager, Southern Region; Mr. W. E. Flew, Stationmaster, Weymouth; Sir Philip Warter; and Mr. F. A. Tribble, Assistant District Traffic Superintendent, Southampton, on the recently lengthened platform at Weymouth.

Survey of "C"-Licence Transport.—Speed and certainty of delivery were found, in a survey of "C"-licence transport conducted by the Traders' Road Transport Association, to be the main criteria in selecting the means of goods transport. Freedom from breakage and damage and absence of pilferage came next. The survey was based on information supplied by more than 4,800 firms representing a wide variety of industries and trades. It shows that only 17 per cent of the vehicles considered returned empty. This figure is reduced to 8 per cent if bulk carriers and tippers, which do not normally carry return loads, are excluded. Mr. S. C. Bond, President of the Association, states that there are now more than 1,000,000 "C"-licence vehicles in the United Kingdom.

Rebuilding Tenby Station.—Work now begun on reconstruction of Tenby Station, British Railways, Western Region, includes complete removal of the interior, extending the existing building on the down platform, and demolition and subsequent reconstruction of the building and canopy on the up platform. In the structure on the down platform there will be an enlarged porch leading from the forecourt into the renovated ticket and inquiry hall, which is separated from the waiting room by a glass screen. Construction on the down platform includes slate-hung cavity walls, and the new interior partitions are pre-fabricated timber units. The up platform building contains a general waiting room, ladies' waiting room, toilets, and a store. This is a pre-fabricated timber structure. The new canopy, 200 ft. long and 30 ft. wide, is of steel and aluminium. There are seven seats, enclosed by glass screens on the platform, all under the new canopy. Floors are of asphalt, granolithic and, in the public rooms, quarry tiles. The project was designed in the Office of the Architect, Mr. H. E. B. Cavanagh, A.R.I.B.A., under the direction of Mr. M. G. R. Smith, M.I.C.E., Chief Civil Engineer, Western Region.

Stewarts and Lloyds Limited.—Stewarts and Lloyds Limited is to raise nearly £14,000,000 by a 7-for-20 rights issue of £1 ordinary at

Sir Philip Warter and officers on the recently lengthened platform at Weymouth Station, British Railways, Southern Region

40s. to finance its expansion programme. This action is believed to have been postponed previously because of the artificially depressed level of market prices before the Election.

Sheffield Wire Rope Co. Ltd., Golden Jubilee.—The Sheffield Wire Rope Co. Ltd. is celebrating its golden jubilee this year. It is the only firm in Sheffield making wire rope and specialises in the manufacture of this for the general engineering industries. It was acquired recently by the Firth Cleveland Group.

Small & Parkes Limited on Telex.—Small & Parkes Limited, the maker of Don brake linings and disc brake pads, has installed Telex at its registered office and works, Hendham Vale, Manchester, 9, and at the London office, 251, Kingston Road, S.W.19. The numbers are: for Manchester, Telex 66161; and for London, Telex 25439.

Special Train for A.B.T.A. Convention.—The members of the Association of British Travel Agents meet at Harrogate on October 24 for their annual convention. To convey the large number of travel agents who are attending from London and the South of England, British Railways, Eastern Region, will run a special diesel-hauled restaurant car express leaving Kings Cross at 12 noon. The journey of over 200 miles to Harrogate will take 4 hr., including a brief stop at York. The locomotive will be a Type "4" diesel-electric. The party will return by special train from Harrogate on October 29, leaving at 10.30 a.m.

Eastern Region "Progress Chaser" Competition.—Fifty boys, prizewinners in British Railways, Eastern Region, "Progress Chaser" competition, have been invited to the prize-giving on board ss. *Amsterdam* at Harwich Parkeston Quay, on October 31. The winners took part in the competition during the summer, in which children submitted reports on examples of railway modernisation observed when travelling on the Great Eastern Line of the Eastern Region. Lunch on board will be followed by a railway quiz conducted by Mr. C. J. Allen, one of the judges, a film show, and a tour of the ship. Mr. W. G. Thorpe, Line Traffic Manager (Great Eastern), Eastern Region, will present the prizes.

Forthcoming Meetings

October 27 (*Tue.*).—Railway Correspondence & Travel Society. East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Display of colour and black and white slides, by Mr. J. B. C. McCann.

October 28 (*Wed.*).—Peterborough Railway Discussion Group, at Eastfield Road, at 6.45 p.m. Paper on the "Port of Liverpool," by Mr. W. E. Sutton, Public Relations Officer, Mersey Docks & Harbour Board.

October 28 (*Wed.*).—British Railways, Southern Region Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 6 p.m. Paper on "Southampton Docks," illustrated, by Mr. S. A. Finnis, Chief Docks Manager.

November 2 (*Mon.*).—Institute of Traffic Administration, Manchester Centre, at the Engineers' Club, Manchester, at 7 p.m. Debate on road and railway modernisation.

November 3 (*Tue.*).—Institute of Traffic Administration, Southampton Centre, at the Civic Centre, Southampton, at 7.30 p.m. Joint meeting with British Productivity Council. Paper on "Mechanical handling in transport," by Brigadier R. G. Winton.

November 3 (*Tue.*).—Institute of transport, anniversary luncheon at the Connaught Rooms, Great Queen Street, W.C.2, at 12.15 for 1 p.m.

November 3 (*Tue.*).—South Wales & Monmouthshire Railways & Dock Lecture & Debating Society, Cardiff branch, at the Angel Hotel, Cardiff, at 6.30 p.m. Paper on "Some experiences in locomotive design," by Mr. E. S. Cox, Assistant Chief Mechanical Engineer, British Railways, Central Staff.

November 3 (*Tue.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Presidential Address by Mr. A. C. Hartley.

November 4 (*Wed.*).—Peterborough Technical College, Railway Discussion Group, at Eastfield Road at 6.45 p.m. Paper on "Signalling history," by Mr. C. M. de V. Le Seur, Signal Engineer's Office, Reading, Western Region.

November 5 (*Thur.*).—British Railways, Western Region, London Lecture & Debating Society, at the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "Modernisation and men," by Mr. A. R. Dunbar, Manpower Adviser, British Transport Commission.

November 5 (*Thur.*).—The Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. A talk by Mr. F. L. Back on "Electrification in East Kent."

November 5 (*Thur.*).—Institution of Railway Signal Engineers, York Section, at the Signalling School, Toft Green, York, at 5.30 p.m. Paper on "Engineering accounts and statistics," by Mr. W. Bartley, British Railways, North Eastern Region.

November 6 (*Fri.*).—The Railway Club, at the Royal Scottish Corporation, Fetter Lane, E.C.4, at 7 p.m. Paper on "The railways of the West of England," by Mr. T. B. Sands.

November 7 (Sat.).—The Railway Correspondence & Travel Society, South of England Branch, at the Junction Hotel, Eastleigh, at 6.30 p.m. Paper on "Breakdown gangs," by Mr. S. C. Townroe.

Railway Stock Market

Although not quite up to record levels reached after the general election result, a great deal of business has again been transacted in stock markets. Despite a good deal of profit-taking, many industrial shares touched new record levels. Buying, which was indiscriminate a week ago, has become a good deal more selective. The underlying reason for the advance in share prices is the assumption that trade expansion and lower taxation are in prospect.

With attention centred on industrial and steel shares, very little business took place in foreign and overseas rails, but a welcome development was a good rally in British Funds. Since the election result, for instance, War Loan 3½ per cent has risen 37s. 6d. to £67¼. The rise in British Funds has been due partly to foreign buying. It has also been a reflection of the belief that an increase in the bank rate is now unlikely. Before the election there had been widespread talk of a possible increase in that rate.

There has been further improvement from 14 to 15 in Antofagasta ordinary stock. The preference stock also gained a point at 25, and the 5 per cent (Bolivia) debentures remained at 95. Paraguay Central prior debentures were quoted at 19, Mexican Central "A" bearer debentures came back from 56 to 54, while United of Havana second income stock was again 6 and Brazil Railway bonds 7. San Paulo Railway 3s. units kept at 1s. 6d.

International of Central America shares were $22½ and the preferred stock $109½. Guayaquil & Quito assented bonds were 81½ and Chilean Northern 5 per cent debentures 60. Costa Rica ordinary stock was again 17½.

Compared with a week ago, Canadian Pacifics moved up from $47½ to $48½; the 4 per cent debentures were marked up from 63 to 64¼ and the 4 per cent preference stock was fractionally better at 57¼. White Pass shares eased slightly to $13¼.

Nyasaland Railways shares kept at 10s. 6d. West of India Portuguese capital stock at 105½.

Sentiment as to the shares of locomotive builders and engineers was affected by the warning given to North British Locomotive shareholders not to expect any dividend for 1959, and perhaps not for two or three years. No dividend was, in fact, anticipated for the current year, but the company statement indicates that recovery in earnings may prove a longer process than had been expected. North British Locomotive shares fell back sharply to 7s. 6d. compared with 12s. 4½d. a week ago. Elsewhere, Gloucester Wagon 10s. shares have come back to 14s. compared with 16s. 3d. a week ago and Wagon Repairs 5s. shares from 10s. 3d. to 9s. 6d. Beyer Peacock 5s. shares at 8s. 3d. were maintained on balance, and Birmingham Wagon rose from 30s. 1½d. to 31s. 6½d. Charles Roberts 5s. shares rose from 14s. 1½d. to 15s. 9d.

Westinghouse Brake were good again, and at 53s. 3d. have more than held the rise recorded a week ago. G. D. Peters changed hands at 18s. Pollard Bearing 4s. shares have been firm at 34s. 3d. on the expansion in profits shown for the half-year, but the directors state that to provide additional productive capacity, substantial capital expenditure will be required in the near future. T. W. Ward shares bounded ahead to 138s. 9d. This compared with 115s. a week ago before the news of the rise in profits, the increase in the dividend from 20 per cent to 25 per cent and the one-for-one scrip issue. Dowty Group 10s. shares held last week's rise to 40s. and Pressed Steel 5s. shares rose further from 36s. 9d. to 37s. 3d. Stone-Platt Industries have advanced from 53s. 6d. to 60s., and Ruston & Hornsby moved up from 23s. 4½d. to 34s. 3d. Vickers rallied further from 30s. to 31s. 9d. Associated Electrical were up to 67s., compared with 64s. a week ago. General Electric gained 3s. to 48s. and English Electric were 49s. Crompton Parkinson 5s. shares rose further from 16s. 7½d. to 17s. 3d.

Steels came in for a huge business, but did not hold best levels, though they showed big gains compared with a week ago. Dorman Long, for example, were 55s., against 48s. 9d. a week ago, but they touched 60s. at one time. Colvilles have risen on the week from 52s. 3d. to 56s. and United Steel from 55s. to 65s.

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